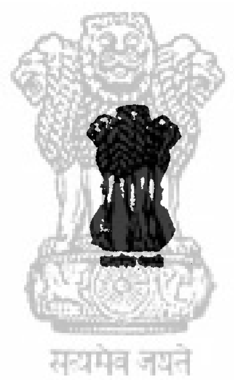
REPORT OF THE COMMITTEE
ON
REHABILITATION & MODERNISATION
OF
SUGAR FACTORIES IN INDIA
(1965)



PART I, II

GOVERNMENT OF INDIA
MINISTRY OF FOOD & AGRICULTURE

CONTENTS

PART I

PARA		PAGE
0.	Introduction	1
0·1	Personnel of the Committee	1
0·2	Terms of reference	3
0·3	Commencement of work	3
0·4	Method of inquiry	4
0·5	Scope of inquiry	4
0·6	Limitations of the Committee	4
0·7	Pattern of the report	5

Discussions and Recommendations on the Aspects Studied

PARA		PAGE
1.	The main problems of the sugar industry	6
1·1	The problem of fluctuating production	7
1·2	Reasons for fluctuations in production	8
1·3	Measures for stabilising production	9
1·3·1	Sugarcane production to be planned	9
1·3·2	Preventing diversion of cane for *gur* and *khandsari* manufacture in factory areas	9
1·3·3	Provision of necessary facilities for cane development	9
1·3·4	Control of floods, drought, frost, water-logging etc.	10
1·3·5	Plant protection measures	10
1·4	Influence of capacity on production	10
2	The problem of high cost of sugar production	10
2·1	Cost of cane	10
2·1·1	Potential for improvements in yield and quality	10
2·1·2	Requirements of the sugarcane crop for high productivity	11
2·2	Reduction in manufacturing cost	21
2·2·1	Age of the factory equipment	22
2·2·2	Capacity	23
2·2·3	Efficiency	24
2·2·4	Need for rehabilitation, modernisation and expansion of uneconomic units	27
	(*a*) Assessment of rehabilitation and modernisation costs	28
	(*b*) Problems involved in rehabilitation of old units	30
	(*c*) Merging	32
2·2·5	Surplus labour	34
2·2·6	Utilisation of by-products	35
	(*a*) Bagasse	35
	(*b*) Molasses	37
	(*c*) Press mud	39
3.	Overall financial implications of rehabilitation	40

PARA		PAGE
4.	Measures for the rehabilitation of the sugar industry	41
4·1	The present economic position of the industry	41
4·1·1	Ownership	42
4·1·2	Growth of assets	42
4·1·3	Availability of resources	43
4·1·4	Profitability	44
4·1·5	Other factors contributing to uneconomic working	45
4·2	Measures for augmenting resources	46
4·2·1	Regulatory measures	46
	(*a*) Protection of high cost units during free economy	46
	(*b*) Controlled economy during the period of rehabilitation	47
	(*c*) Regional cost structure	47
	(*d*) Revision of cost schedules	47
	(e) Provision for adequate depreciation allowance	48
·2·2	Creation of loan facilities	51
	(*a*) Funds needed for expansion and modernisation of factory plants and the foreign exchange requirement	51
	(*b*) Revolving fund	52
	(*c*) Deferred payment facilities	52
	(*d*) Incentive for scrapping old units	52
	(*e*) Safeguards	53
	(*f*) Executive machinery	54
5.	Future planning of the industry	54
5·1	Lessons from the past	54
5·2	Approach to future planning	55
5·2·1	Location of new production capacity	55
5·2·2	Potential	57
5·2·3	Siting of the new units	57
5·2·4	Size of the new units	58
5·2·5	Several small units *vs.* a few big units	58
5·2·6	Additional space requirement	58
5·2·7	Units for export	59
5·2·8	Integrated sugar-*cum*-by-product industries	59
5·2·9	Simultaneous development of cane and communications along with development of new factory units	59
5·2·10	Expansion of existing units *vs.* installation of new units	59
6.	Summary of conclusions and recommendations	59
7.	Acknowledgements	74
	Appendices	
	Appendix I — Text of the speech delivered by Shri V. Shankar	75
	Appendix II — Circular and questionnaire issued to the sugar factories	78
	Appendix III — Proformae for getting information from the States	92
	Appendix IV — List of persons with whom discusions were held	99
	Graphs	
	Graph 1. — Production and consumption of sugar in India (1936-37 to 1963-64)	113
	Graph 2. — Sugar produced per 100 tonnes of installed capacity	115

सत्यमेव जयते

PART II

PARA PAGE

Report for the State of Punjab

1. General aspects 117
2. Technical aspects 120
3. Economic aspects 125
4. Specific problems of the factories 128
5. Recommendations 129
6. Tables I A to VIII C 135–150

Report for the State of Uttar Pradesh

I West Uttar Pradesh

1. General aspects 151
2. Technical aspects 153
3. Economic aspects 162
4. Specific problems of the factories 166
5. Recommendations 172
6. Tables I A to VIII C 178–219

II East Uttar Pradesh

1. General aspects 220
2. Technical aspects 223
3. Economic aspects 233
4. Specific problems of the factories 236
5. Recommendations 243
6. Tables I A to VIII C 254–290
III Appendix I System of cane marketing and cane development in U.P. 291

Report for the State of Bihar

1. General aspects 297
2. Technical aspects 304
3. Economic aspects 312
4. Specific problems of the factories 316
5. Recommendations 323
6. Appendix I Receipts and utilisation of cane cess 334
7. Tables I A to VIIIC 335–369

Report for the State of West Bengal

1. General aspects 371
2. Technical aspects 373
3. Economic aspects 377
4. Specific problems of the factories 380
5. Recommendations 380

Report for the State of Assam

1. General aspects 383
2. Technical aspects 383
3. Economic aspects 386

PARA PAGE
4. Specific problems of the factory 386
5. Recommendations 387
6. Appendix I Scheme for development of sugarcane . . . 391

Report for the State of Orissa

1. General aspects 395
2. Technical aspects 395
3. Economic aspects 398
4. Specific problems of the factory 400
5. Recommendations 400

Report for the State of Madhya Pradesh

1. General aspects 401
2. Technical aspects 404
3. Economic aspects 411
4. Specific problems of the factories 413
5. Recommendations 414
7. Tables I A to VII C 421–433

Report for the State of Rajasthan

1. General aspects 435
2. Technical aspects 436
3. Economic aspects 442
4. Specific problems of the factories 444
5. Recommendations 445
6. Tables I A to VI C 450–459

Report for the State of Gujarat

1. General aspects 461
2. Technical aspects 463
3. Economic aspects 469
4. Specific problems of the factories 471
5. Recommendations 473
6. Tables I A to VIII B 475–486

Report for the State of Maharashtra

1. General aspects 487
2. Technical aspects 492
3. Economic aspects 504
4. Specific problems of the factories 508
5. Recommendations 512
6. Tables I A to VIII C 519–551

Report for the State of Mysore

1. General aspects 553
2. Technical aspects 556

PARA PAGE
3. Economic aspects 561
4. Specific problems of the factories 563
5. Recommendations 565
6. Tables I A to VIII C 572–589

Report for the State of Andhra Pradesh

1. General aspects 591
2. Technical aspects 597
3. Economic aspects 606
4. Specific problems of the factories 609
5. Recommendations 614
6. Tables I A to VIII C 618–638

Report for the State of Madras

1. General aspects 639
2. Technical aspects 643
3. Economic aspects 650
4. Specific problems of the factories 653
5. Recommendations 655
7. Tables I A to VIII C 661–677

Report for the State of Pondicherry

1. General aspects 678
2. Technical aspects 679
3. Economic aspects 680
4. Recommendations 681

Report for the State of Kerala

1. General aspects 682
2. Technical aspects 684
3. Economic aspects 685
4. Recommendations 687

REPORT OF THE COMMITTEE
ON
REHABILITATION AND MODERNISATION
OF
SUGAR FACTORIES IN INDIA

(1965)

PART I

(The Overall Report)

REPORT OF

THE COMMITTEE ON REHABILITATION AND MODERNISATION OF SUGAR FACTORIES IN INDIA

0. Introduction

The problem of uneconomic units in the sugar industry has been engaging the attention of the Government for some time past. The need to rehabilitate and modernise the old and outmoded plants has recently been highlighted, as the production of sugar in the country has to be stepped up, as far as possible, not only to meet the rising internal demand but also for export outside the country.

In its report on the cost structure of sugar and fair price payable to the sugar industry, the Tariff Commission (1959) had also observed that a thorough and objective examination of the magnitude of the problem of rehabilitation of existing units and the financial resources required for the purpose was needed. This question was also considered by the Development Council for Sugar Industry at its meetings held during 1962 and 1963.

Accordingly, having regard to the urgent need of rehabilitation and modernisation of the old and uneconomic units in the sugar industry, the Government of India in the Ministry of Food & Agriculture appointed a Committee on the 22nd June, 1963 to go into this question in detail and to make its recommendations.

0.1 Personnel of the Committee

The Committee consists of the following:

1. Shri S. N. Gundu Rao. Director, National Sugar Institute, Kanpur. (Now Technical Adviser, British India Corporation, Kanpur).	Chairman
2. Shri J. C. Luther, Dy. Financial Adviser to the Govt. of India, Ministry of Food & Agriculture, New Delhi.	Member
3. Shri Gyan Chandra, Additional Chief Director, Directorate of Sugar & Vanaspati, New Delhi. [Shri N. S. Jain, Director (Sugar Technical), Directorate of Sugar & Vanaspati attended the meetings of the Committee in place of Shri Gyan Chandra whenever the latter was unable to attend]	Member

4. Representative of the State Government concerned.	Co-opted Member*
5. Shri N. C. Varma, Assistant Director, National Sugar Institute, Kanpur.	Member-Secretary

*The Committee co-opted the following representatives from each State with regard to the investigations of the Committee in their respective States :—

	Name of the State	Name of co-opted member	Designation
1.	Punjab	Shri Sher Jung Singh	Cane Commissioner, Punjab, Chandigarh.
2.	Uttar Pradesh . . .	Shri M. Zunnurain	Cane Commissioner, U.P., Lucknow.
		Shri S. N. Acharya	Dy. Secretary, Industries Deptt. Lucknow.
3.	Bihar	Shri Jitendra Prasad	Cane Commissioner, Bihar, Patna.
4.	West Bengal . . .	Shri S. C. Roy	Additional Director of Agriculture, West Bengal, Calcutta.
5.	Orissa	Shri A. K. Roy	Addl. Registrar of Co-operative Societies Orissa, Bhubaneshwar.
6.	Madhya Pradesh . . .	Shri Y. Rama Rao	Jt. Director of Agriculture & Additional Cane Commissioner, Madhya Pradesh, Bhopal.
7.	Rajasthan	Shri R. R. Purohit	Jt. Director of Industries & Supplies, Jaipur.
8.	Gujarat	Shri H. M. Joshi	Registrar of Coop. Societies, Ahmedabad.
9.	Maharashtra	Dr. V. V. Kale	Dy. Director of Industries, Bombay.
10.	Mysore	Shri V. Venugopal Naidu	Chairman & Managing Director, Mysore Sugar Co. Ltd., Mandya.
11.	Andhra Pradesh . . .	Shri D. K. Brahma	Technical Officer, Co-operative Sugar Factories, Hyderabad.
12.	Madras	Dr. S. Krishnamurthy	Director of Agriculture, Madras.
13.	Kerala	Shri K. P. Vishwanathan	Director of Industries & Commerce, Trivandrum.

The Committee was assisted by the following staff :

1. Shri Mangal Singh, Senior Technical Officer 2. Shri J. K. Ahuja, Statistician 3. Shri M. K. Sanghi, Junior Technical Officer 4. Shri R. K. Jain Junior Technical Officer	National Sugar Institute, Kanpur

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0.2 Term of reference of the Committee

The terms of reference of the Committee were as follows :—

(a) To investigate into the position and problems of uneconomic units in the sugar industry.

(b) To recommend whether the problems could be tackled on the basis of individual units or combination of units or of areas in which such units predominate.

(c) To suggest measures whereby the uneconomic units can be made economic, such as :—

- (i) by expansion of existing units;
- (ii) by rehabilitation and modernisation of plants;
- (iii) by increasing production of sugarcane in the area;
- (iv) by schemes of merger and solution of consequential problems of surplus labour;
- (v) by effecting economy in the consumption of fuel and utilisation of by-products; and
- (vi) such other measures as the Committee may consider reasonable and feasible.

(d) To assess the financial costs involved in the measures recommended and to suggest ways and means of assisting the industry in raising necessary funds either out of its own resources or of borrowings from banks or from loans and other measures of financial assistance from the Central and State Governments.

0.3 Commencement of work by the Committee

The first meeting of the Committee was inaugurated on July 1, 1963 at Kanpur by Shri V. Shankar, the then Secretary to the Government of India in the Department of Food, Ministry of Food and Agriculture.

Shri V. Shankar referred to recent developments in the sugar industry and the basic problems which had become accentuated as a result of the pressing need for increased production of sugar in the country for home consumption as well as export. Problems had in fact existed since long, but hitherto there had been only a crisis approach towards them. It had now become imperative to find solutions for them. He emphasised that it was essential to introduce a sense of economy in the industry and to study the problem of rehabilitation in relation to agriculture, economic condition of the growers, performance of the manufacturing units and efficiency of labour and management. He observed that the Committee should make a thorough study of all the relevant issues and present a studied picture. Where factories could merge to form economic units, the question of surplus labour would have to be tackled and where the units could not improve because of deficiency of management they may have to be taken over by the Government in public interest. The question of by-product utilisation should also be examined by the Committee as it was linked not only with the economics of production but also with the rehabilitation of surplus labour.

The text of the speech delivered by Shri V. Shankar is given in Appendix I. It will be seen from the content of this speech that the Committee was required to study the condition of the sugar industry in all the regions of the country and not confine its attention merely to the uneconomic units.

It was to be studied as to how a sense of economy could be introduced in the sugar industry as a whole, and also to find long range solutions to the recurring and cyclic ills of the industry.

0.4 Method of inquiry

The Committee issued a circular on July 3, 1963 to all the sugar factories in the country for eliciting necessary information. A copy of the circular is at Appendix II. The Committee also invited the views of the various branches of the Indian Sugar Mills' Association and Associations of Co-operative Factories. State Governments were also addressed to supply information pertaining to the position and problems of the sugar industry in their respective territories and their development plans, if any, vide Appendix III.

The information furnished by the various parties was studied and general discussions were held with the representatives of the industry and the State Governments. Thereafter, the Committee paid visits to the different regions for on-the-spot discussions with local representatives and technical staff of the factories. Some sugar factory plants were also inspected by the Committee. A list of the various State Government Officials and representatives of the factories with whom discussions were held is given in Appendix IV.

0.5 Scope of inquiry

The Committee tried to ascertain the general situation of the industry in each State/Region and the extent of uneconomic performance of the factories as also the causes responsible for it. It also examined the rehabilitation, modernisation and expansion requirements of the factories. The Committee has based its study on the data furnished by the factories and the concerned departments of the State Governments. The position in respect of profit or loss was studied from the audited Balance Sheets furnished by the factories. Much as the Committee would have liked to analyse the actual costs of production of each factory under various items, it was not possible for it to do so.

The Committee has also examined the position in respect of sugarcane production, supply, marketing, development and further production potential as these have an important bearing on the economic performance of the industry.

0.6 Limitations of the Committee

The Committee had to work under considerable handicaps and limitations. The terms of reference involved a wide study, necessitating examination of almost every aspect having a bearing on the economics of the industry. The entire industry of the country had to be covered and discussions had to be held with concerned authorities of the various State departments and representatives of sugar factories. Many factories did not have the necessary data ready at hand and took time to compile them. Information from the States also was not readily available and some of the States could not supply complete information. Neither the factories, in general, had a clear picture of their exact requirements and of their future development nor was such information available at the State level. Even so the Committee has endeavoured, to the extent possible, to assess the magnitude of the problems and recommend measures for the rehabilitation of uneconomic units and for improving the economic picture in the various regions so as to enable long term planning.

0.7 Pattern of the report of the Committee

In presenting its report, the Committee has more or less followed the pattern it laid for itself for its study. As the sugar industry is agro-based and its economics centre round production and transport of sugarcane, with which the States are ultimately concerned, a statewise approach was considered desirable. The nature and magnitude of the problems as well as the efforts of finance and execution involved have also been assessed statewise in order that the States may plan accordingly. The report of the Committee is therefore presented in two parts. Part I is the overall report and Part II contains the reports of the individual States.

The overall report (Part I) contains the introduction, the personnel and terms of reference of the Committee, the procedure adopted by it in its work, the scope of its inquiry, the limitations of the Committee, the discussions and recommendations on the various aspects studied by the Committee, the summary of recommendations, acknowledgments and the various Appendices and graphs.

The State reports (Part II) are on a uniform pattern and are self contained though this has meant some repetition. The position and problems of the sugar industry in each State have been considered in their General, Technical and Economic aspects and the specific problems of almost every factory in the State as reported by it have also been given. In the light of data collected and studies made, the Committee has given its recommendations on the measures to be adopted for improving the economic condition of the industry in each State. The data collected in respect of each State are given in the appendices attached to each report.

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DISCUSSIONS AND RECOMMENDATIONS ON THE ASPECTS STUDIED

1. The Main Problems of the Sugar Industry

From the terms of reference of this Committee, it became evident that the task of the Committee involved an investigation into all aspects that have a bearing on the economics of sugar production. The problem of rehabilitation and modernisation of uneconomic units in the sugar industry has become urgent ever since the need has been felt for ensuring an increasingly higher sugar production year after year to meet the growing internal demand and to fulfil export commitments. Both these require, besides assured supplies, availability of sugar at reasonable and fair price. It is in this context that a study of the ways and means by which the cost of production of sugar can be reduced in all factories, whether economic or uneconomic, becomes important. At the outset, therefore, the Committee considered it necessary to define an "uneconomic" unit. In the normal usage of the term—an uneconomic unit is one which is incurring losses year after year. The Committee has however preferred to call a unit "uneconomic" if there is scope for reducing its cost of production. The Committee has also considered the economic condition of a unit to be fluid and changing with factors which may not have directly to do with efficiency or productivity. In so far as the Committee's task was to find ways and means of introducing on a long term basis a sense of economy at every stage of sugar production, the highest standards of efficiency and productivity were the limits. In the light of this approach in our efforts to assess the scope for reducing production costs, most of the units would be more or less uneconomic. Thus for example, a small sized unit, which is efficient and modern, has still scope for reducing costs by expansion. The urgency however, is in respect of these units which have been most outdated and have outlived their life and are tottering along involving heavy running and maintenance costs.

Rehabilitation and modernisation of factories is one obvious step to reduce the losses of sugar in processing, which is of vital interest to the cane grower also as cane price is now liked to recovery. Fuller utilisation of the by-products of the industry would also reduce the cost of production of sugar. The economic nature of a unit also depends on price realisation. How far disparities in price can be safeguarded was therefore also studied by the Committee. Since cost of sugarcane constitutes nearly 67 per cent of the total cost of sugar, it became necessary for the Committee to study how sugarcane costs could be reduced. In order to ensure proper rehabilitation and modernisation of uneconomic units in the country and to see how a sense of economy could be introduced in the matter of sugar production, the Committee had to investigate all aspects of sugar production from the growing of sugarcane to the utilisation of by-products including price realisations for sugar. It was necessary to see that there was no weak link in the chain, which would make the efforts infructuous.

Apart from the question of a large number of uneconomic units in the country, an important feature of the industry which has not only a direct bearing on the economics of the industry but also on the availability of sugar itself, is the highly fluctuating character of sugar production. It is this fluctuating production, particularly the shortfalls in production, resulting in lack of availability to the consumer in quantities required by him and the necessity of having to pay high prices, that created the problems for the industry and Government. The consumer might not grudge to pay a somewhat higher price for the period the industry is endeavouring to rehabilitate itself, but he would react sharply if he is required to pay a high price over a long period. Likewise, the industry is in doldrums whenever there is excess production resulting in accumulation of stocks and blocking of finances .There is also the feature of long durations of season under which the grower suffers on account of driage of crop and long occupation of his land. The industry under such circumstances also suffers heavy losses due to slump in prices. As against this, when there is a shortfall in production, as a consequence of surplus production, there is a swing to the other extreme. Sugarcane production goes down and competition from *gur* and *khandsari* becomes acute. Higher price of cane is demanded and due to this and shorter duration the consumer price for sugar goes up. In order to increase production, the exchequer has to give incentives such as remission in excise duty.

Various expedients tried from time to time have not given a lasting solution. Despite increases in the installed capacity year after year, the cyclic fluctuations in production have unfortunately persisted. Fluctuations in production have also been responsible for lack of development of by-product industries, such as molasses based alcohol industry and bagasse based paper industry. These industries being capital-intense, required assured supplies of raw material for economic performance.

In so far as Committee's task was to take an integrated approach to the economic production of sugar in the interest of the consumers, the grower and the industry, and as the cyclic fluctuations in production can defeat all efforts at economy, the Committee considered it necessary to investigate into this aspect also. In the light of the above, the Committee placed before itself the task of investigating the various aspects of the following main problems, *viz.*,

(a) Fluctuations in sugar production

(b) High cost of sugar production

1.1 The problem of fluctuating production

Since the beginning, the Indian sugar industry has been characterised by periodic cycles of under and over production as will be seen from the following table and Graph 1.

(Figures in lac tonnes)

Sugar year (1st Nov. to 31st Oct.)	Carry over on 1st November	Production during the year	Imports	Total availability	Consumption	Exports
1	2	3	4	5	6	7
1950-51 . .	0·91	11·34	0·57	12·82	10·98	..
1951-52 . .	1·84	15·20	..	17·04	11·82	0·08
1952-53 . .	5·14	13·18	0·60	18·92	16·79	0·07
1953-54 . .	2·05	10·30	7·30*	19·65	18·36	..
1954-55 . .	1·29	16·22	5·74*	23·25	17·51	..
1955-56 . .	5·74	18·90	0·69*	25·33	19·72	..

1	2	3	4	5	6	7
1956-57 . .	5·61	20·74	..	26·35	20·18	1·47
1957-58 . .	4·70	20·09	..	24·79	20·75	0·36
1958-59 . .	3·68	19·51	..	23·19	21·13	0·30
1959-60 . .	1·76	24·82	..	26·58	20·53	..
1960-61 . .	6·05	30·29	...	36·34	21·27	2·47
1961-62 . .	12·60†	27·14	..	39·74	25·87	3·61
1962-63 . .	10·26†	21·52	...	31·78	24·88	5·14
1963-64 . .	1·76†	25·69	..	27·45	23·36	2·50
1964-65 . .	1·59†					

*Includes refined sugar manufactured in India from imported raw sugar.
†Includes stocks with the Export Agency.

It will be seen that, in 1951-52 there was a record production of 15.20 lac tonnes as against a consumption of 11.82 lac tonnes and an export of 8000 tonnes. This resulted in a carry over of more than 5.0 lac tonnes and the production in 1953-54 fell to as low as 10.3 lac tonnes as against the consumption of 18.36 lac tonnes. From September 1953 to March 1956, as much as 14.32 lac tonnes of sugar was imported to meet the internal demand. The short production in 1953-54 necessitated incentives to be given by Government, for early start and late crushing. This pushed up the production to 20.74 lac tonnes in 1956-57. With the carry over from the previous season, the total availability in 1956-57 increased to 26.35 lac tonnes as against th consumption of 20.18 lac tonnes. Due to easy availability, exports were restarted in substantial quantities and 1.46 lac tonnes of sugar was exported. These exports were made without incurring any loss, because of the spurt in international prices consequent to Suez crisis and shortfall in European beet production. The production again fell to 19.51 lac tonnes in 1958-59, consumption rising to 21.13 lac tonnes. The exports were curtailed to the commitments already made and incentives were given for increasing the production, in the form of rebate in excise duty on additional production, increase in cane price and concessions for early start and late crushing. Under the stimulus of such incentives given in the next two years the production reached an all time record of 30.29 lac tonnes in 1960-61 with the resultant carry over of 12.60 lac tonnes for the year 1961-62. This created a surplus crisis, and a cut of 10 per cent on production had to be imposed during 1961-62. This had an adverse inference on production which fell to the low level of 21.52 lac tonnes in 1962-63, creating a highly deficit condition in the country. This crisis had again to be met by giving incentives and the production increased to 25.69 lac tonnes during 1963-64 and is expected to exceed 30.0 lac tonnes in 1964-65.

Almost all major sugar producing regions have been subject to fluctuations as will be seen in Graph 2.

1.2 Reasons for fluctuations in production

The fluctuations in production have been due, broadly, to

(i) Absence of planning in sugacane production.

(ii) Diversion of sugarcane in factory areas for the production of *gur* and *khandsari.*

(iii) Lack of facilities of irrigation, supply of manures and fertilisers, supply of disease free seed of suitable varieties etc. necessary for intensive cultivation of good quality cane.

(iv) Unfavourable climatic conditions, floods, drought, frost, waterlogging etc.

(v) Incidence of insects, pests and diseases.

1.3 Measures for stabilising production

1.3.1 *Sugarcane production to be planned*

Under the present day conditions there is hardly any planning in the matter of sugarcane production. Acreage under sugarcane continues to be influenced by the price of sugarcane and *gur* prevailing at the sowing time. In the opinion of the Committee it is essential to clearly define and reserve the factory zones on a long term or permanent basis. Depending on the capacities of factories, area under sugarcane should be controlled to meet the optimum requirements of the factories. The sugarcane growers should be educated to align their interests with those of the factory and the factory in turn should see to it that the interests of the growers are not allowed to suffer. As much direct contact should be established between the two as possible.

1.3.2 *Preventing diversion of cane for gur and khandsari manufacture in factory areas*

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Supplies of sugarcane to white sugar factories have suffered whenever there has been a rise in the price of *gur* resulting in a shortfall in sugar production. Production of sugarcane for gur manufacture should therefore be planned separately. As far as possible no large scale manufacture of *gur* and *khandsari* should be permitted in factory areas. Licenses for new power crushers should not be given in factory areas and the existing licensees should be encouraged to shift to places outside the factory zones. An effective system of long term bonding of cane coupled with penalties, strictly enforced in case of breaches, would go a long way in preventing diversion and avoiding fluctuations in sugar production. During periods of control on white sugar, restrictions on the stocks and movement of *gur* and *khandsari* would also be a means of preventing diversion.

1.3.3 *Provision of necessary facilities for cane development*

Fluctuations in yield and recovery can to a large extent be minimised by providing adequate irrigation and manuring and sowing the most suitable varieties for the tract, based on soil surveys and varietal trials. Provision of good, healthy seed would also go a long way in improving yield and recovery.

1.3.4 *Control of floods, drought, frost water logging etc.*

Flood control schemes, provision of liberal irrigation to withstand effects of drought or frost and introduction of drainage schemes, though costly are essential not only in the interest of sugarcane production but also for the benefit of general agriculture and should be taken up, implemented or augmented as soon as possible.

1.3.5 *Plant protection measures*

Incidence of insects, pests and diseases particularly borers, red rot, wilt and smut are causing appreciable damage in several sugarcane tracts over wide areas. They depress yield and quality and also affect the successive crops. The Committee is of the view that plant protection measures being taken at present are not adequate and need to be strengthened considerably.

1.4. Influence of capacity on production

Another important factor which has a bearing on production is the capacity of a factory to crush available supplies. Growers desire the disposal of their cane within a reasonable period of time. Early start affects production due to lower recovery and late crushing not only affects recovery but also hits the grower financially. Delayed clearing of fields affects not only the sowings for the next season but also the crop rotation. The Committee therefore recommends that the factories should have adequate capacities to enable them to crush the available cane in a reasonable duration of season.

2. The Problem of high Cost of Sugar Production

In as much as there is need for cheapening the cost of sugar for domestic consumption and more so for export purposes, the Committee has examined the scope for reduction in the cost of production of sugar in India. The cost is broadly composed of (i) cost of cane (ii) conversion charges and (iii) return on capital.

2.1. Cost of cane

In the present cost structure, the cost of cane constitutes about 67 per cent of the total cost. The greatest scope for reduction therefore lies in the cost of production of sugarcane. The yield quality of sugarcane are the two main factors that influence the cost of cane. If the yield of sugar per acre or in other words the productivity of sugarcane can be increased, to that extent, the cost of cane and consequently the cost of sugar can be brought down. The Committee has therefore examined the aspect of sugarcane productivity in some detail.

2.1.1 *Potential for improvements in yield and quality*

The table below gives the average yields obtaining in the various States as a whole and the yields obtained in development zones, which show the potential for immediate achievement. The average quality of cane and the maximum achieved in the past indicating the potential for improving cane quality, are also given:

State	Yield (Av. of last 5 years for whole State) (tonnes/acre)	Max. in Dev. zones in last 5 years	Pol per cent cane (average of five years)	Pol per cent cane (maximum in 12 years)	
1. Punjab	14·3	19·2	11·3	12·0	East U.P.
2. Uttar Pradesh . . .	14·6	17·8	12·2	12·3 12·5	West U.P East U.P.
3. Bihar	14·1	20·6	12·1	12·8	
4. West Bengal . . .	18·8	25·4	12·1	12·9	
5. Assam	14·4	21·2	11·0	12·0	
6. Orissa	13·4	30·1	11·9	12·5	
7. Madhya Pradesh . .	10·6	17·6	12·1	12·4	
8. Rajasthan	9·5	..	12·0	12·5	
9. Gujarat	21·9	30·0	13·2	13·5	
10. Maharashtra . . .	29·7	51·3	13·9	14·2	
11. Mysore	30·9	38·3	13·2	13·6	
12. Andhra Pradesh . . .	30·9	35·3	12·4	12·9	
13. Madras	30·3	44·2	11·6	12·4	
14. Kerala	15·3	28·0	10·7	11·0	

It will be seen that appreciable improvements can be made in the growers' fields if proper attention is paid. The highest yields obtained in cane crop competitions in some of the sugarcane producing regions are as follows :—

Region		Highest yields obtained (tonnes/acre)	Year
Punjab	Eksali	87·30	1957-58
Uttar Pradesh	Eksali	90·52	1958-59
Madhya Pradesh	Eksali	83·21	1961-62
Maharashtra	Eksali	130·42	1961-62
Maharashtra	Adsali	146·66	1959-60
Andhra Pradesh	Eksali	152·93	1958-59
Madras	Eksali	111·21	1957-58

(*Source* :—Indian Central Sugarcane Committee)

Even if fifty per cent of this potential is actually realised, the productivity level of the Indian sugar industry can be raised considerably.

The potential for improvement in quality is also very great as will be seen from the figures in the last two columns of the above table.

2.1.2 *Requirements of the sugarcane crop for high productivity*

The cultivation of sugarcane involves considerable initial investment and care and it is an important cash crop for the cultivator. Sugarcane responds very well to irrigation, manuring and improved agricultural practices. It will be seen from the data given in the preceding paragraph that the productivity is very high in the southern States, where the average holding of the cultivator is comparatively large and the resources better. Even in the northern region, the productivity is good where the needs of the sugarcane crop have been met. It is in the largest sugarcane growing tracts of U.P., Bihar and Punjab that the basic requirements for a good crop of sugarcane are lacking. The holdings are small and the cultivator has not been able to acquire the capital base to take to scientific cultivation. The Committee studied the scope for improving the sugarcane productivity in respect to the following requirements :—

(i) Compactness of areas.
(ii) Land preparation and mechanisation of farming.
(iii) Good seed.
(iv) Irrigation and drainage.
(v) Manures and fertilizers.
(vi) Varieties.
(vii) Plant protection.
(viii) Credit facilities etc.
(ix) Research and extension service.
(x) Harvesting on maturity basis.
(xi) Payment of cane price on quality basis.
(xii) Transport of cane and communications.

The Committee's views in respect of the above needs in the different States are discussed below :—

(i) *Compactness of areas*

Fragmentation of holdings and scattered small areas are impediments for increasing productivity. Mechanisation of farming, proper utilisation of water, manures and fertilisers and effective plant protection measures all become difficult if holdings are scattered. Figures for percentage of gate, road and rail cane in the different States in 1960-61 which to some extent reflect the scattered nature of the sugarcane areas are given in the following table—

State/Region	Per cent gate cane	Per cent rail cane	Per cent road cane
Punjab	53·0	18·5	28·5
West U.P.	42·3	22·9	34·8
East U.P.	71·8	11·1	17·1
Bihar	58·8	28·8	12·4
West Bengal	44·1	7·8	48·1
Assam	55·7	41·8	2·5
Orissa	81·8	18·2	—
Madhya Pradesh	45·3	16·1	38·6
Rajasthan	50·0	50·0	—
Gujarat	100·0	—	-
Maharashtra	100·0	—	—
Mysore	88·3	11·7	—
Andhra Pradesh	83·8	14·3	1·9
Madras	95·0	5·0	—
Pondicherry	100·0	—	—
Kerala	100·0	—	—
ALL INDIA	66·1	16·1	17·8

The number of growers supplying cane to the factories is indicative of the smallness of holdings. The table below gives the total cane crushed and the number of growers supplying the cane as well as the average cane supplied by a grower in each State :—

State/Region	Cane supplied (lac tonnes)	No. of growers (in thousands)	Av. cane supplied per grower (tonnes)
Punjab	13·7	75	18·3
West U.P.	101·3	687	14·7
East. U.P.	48·5	920	5·3
Bihar	41·8	500	8·4
West Bengal	1·8	N.A.	...
Assam	0·8	4	20·0
Orissa	0·3	N.A.	...
Madhya Pradesh	3·3	52	7·3
Rajasthan	2·0	27	7·4
Gujarat	2·6	10	26·0
Maharashtra	45·0	55	81·8
Mysore	12·0	26	46·2
Andhra Pradesh	19·3	45	42·9
Madras	14·4	20	72·0

The figures relating to area under cane and the sugarcane and sugar produced in different states in 1960-61 are given below :—

Station Region	Area under cane		Sugarcane produced		Sugarcane produced	
	lac acres	Per cent of total	lac tonnes	Per cent of total	lac tonnes	Per cent of total
Punjab . . .	6·64	11·5	101·19	9·8	1·22	4·03
U. P.	32·84	56·7	545·16	52·6	14·27	47·10
Bihar . . .	4·58	7·9	70·38	6·8	3·85	12·70
West Bengal . .	0·99	1·7	20·58	2·0	0·17	0·56
Assam . . .	0·62	1·1	8·83	0·8	0·06	0·20
Orissa . . .	0·59	1·0	7·02	0·7	0·03	0·10
Madhya Pradesh .	1·24	2·1	13·59	1·3	0·35	1·16
Rajasthan . .	1·02	1·8	10·02	0·9	0·18	0·59
Orissa . . .	0·45	0·8	9·94	0·9	0·28	0·93
Maharashtra . .	3·10	5·4	89·82	8·6	5·23	17·26
Mysore . .	1·54	2·7	45·23	4·3	1·21	4·00
Andhra Pradesh .	1·90	3·3	55·25	5·3	1·83	6·03
Madras (including Pondicherry) .	1·86	3·2	58·55	5·6	1·51	4·98
Kerala . . .	0·23	0·4	3·81	0·4	0·11	0·36
ALL INDIA (including other States) . .	57·89	100·0	1041·27	100·0	30·30	100·0

It will be observed from the above that U.P., Bihar and Punjab have the largest area under sugarcane being about 76 per cent of the total area under cane in the whole country. It is also in these States that the average supplies of cane per grower are low which is also the case with Madhya Pradesh and Rajasthan. The first approach to improve the productivity in this area is to consolidate the holdings and bring the cane areas as close to the factories as possible by forming co-operatives of the growers or by other means. Efforts should be made to achieve the ideal that the factory operates in the centre of a compact and intensive cane area. The efforts of the U.P. and Bihar Governments in the consolidation of holdings need to be expedited

(ii) *Land preparation and mechanisation of cane cultivation*

Land preparation with improved implements is of great importance for increasing productivity. Mechanisation of cane cultivation is also necessary. [While mechanised and scientific farming has been responsible for the high productivity in the regions of Maharashtra, Madras, Mysore, Andhra Pradesh and even on several farms in the *Terai* regions of U.P., the largest percentage of sugarcane grown in the country, particularly in the sugarcane growing States of U.P. and Bihar is by poor implements and weak animal power. In fact, a large number of cultivators in these areas even do not have the necessary animal power.

The Committee recommends the provision of small tractors and improved implements at reasonable charges from suitably located servicing centres wherever the size of holdings would permit their use. This service could be rendered by the Cane Growers' Co-operative Societies. Incentives should be given by the State Governments/sugar factories in the early stages to such servicing organisations through the grant of subsidies and/or loan facilities for the purchase of tractors and other implements and importation of spare parts. The subsidies would be necessary in the initial stages till the cultivators make full use of the available facilities. It is only then that such servicing centres can become economic.

(iii) *Seed*

While in the States of Maharashtra, Madras, Mysore and Andhra Pradesh, the system af seed distribution and periodic replenishments by fresh, vigorous and healthy seed is satisfactory, similar is not the case in the States of U.P. and Bihar. A very small percentage of the seed requirement is being met by existing seed nurseries. The need for establishment of a large number of primary and secondary seed nursuries, scattered over the area of cane cultivation, to ensure that at least 20 per cent of the seed requirements flow from these nurseries to the cultivators every year, is very important. In this connection, the Committee recommends that every factory should be allowed to have a farm of 500–1000 acres depending on its capacity, which should be utilised for purposes of seed propagation and supply and for demonstration.

(iv) *Irrigation and drainage*

(a) *Irrigation*:

The Committee has found that the greatest single factor responsible for the low productivity over large tracts of U.P. and Bihar (particularly East U.P. and North Bihar) is lack of adequate irrigation facilities. Rainfall is not adequate and if there is failure or deficiency of rainfall, productivity falls much lower. Therefore, irrigation is required not only to make up the deficiency of rainfall but to meet the increased requirements of water by the soil for a good crop. Dependence on rain fall is also responsible for fluctuations in sugarcane production. The overall requirements of irrigation in the factory zones in the various sugar producing States is given in the following table :—

State/Region	State tube-wells	Private tube-wells	Masonry wells	Miscellaneous	Cost in crores of Rs. (including loan & subsidy)
1. Punjab . . .	1,400	1,020	1,200		12·3
2. West U.P. . .	2,866	2,866	19,760	..	30·0
3. East U.P. . .	1,500	1,600	8,000		15·2
4. Bihar . . .	2,400	240	4,720	960 pumping sets	12·7
5. Orissa . . .	..	..	..	5 lift irrigation projects	N.A.
6. Madhya Pradesh .	..	..	9,000	1000 pumping sets 20 Stop dams 70 kms. lining of canal	N.A.
7. Rajasthan . .	..	..	4,000	16 Tanks	N.A.
8. Gujarat . . .	..	..	..	..	N.A.
9. Maharashtra . .	..	..	..	..	N.A.
10. Mysore . . .	..	..	..	..	N.A.
11. Andhra Pradesh .	..	..	12,300	12,300 pumping sets	8·5
12. Madras . . .	10	..	300	800 Do.	0·6
				TOTAL	79·3

सत्यमेव जयते

It will be observed that considerable investment and speedy execution would be necessary for achieving a quick increase in productivity in these areas. The Committee is disappointed to find that in several areas existing irrigation facilities have not been fully and properly utilised even after considerable amounts of money have been spent on creating them. This has to do with the command areas, hours of working, availability of power, lack of maintenance and supervision, etc. In some areas, the high rates of irrigation and indifference of growers towards irrigation have also been responsible for lack of fuller utilization of the available irrigation facilities.

[· The Committee recommends that while the States Governments should streamline the administrative machinery, the rates and subsidies, depending on localities should be so fixed that the fullest use of the irrigation facilities is actually made. When once the advantages of irrigation are realised by the cultivator, he would continue to use the water in spite of the rates being normalised and the subsidies, if any, withdrawn."

The Committee's attention has been drawn to water logged conditions contributing to low yields in sevaral areas, particularly in Madras, Andhra Pradesh, U.P., Bihar and Punjab. Apart from affecting the yields, water logged conditions do permanent damage to the land and become breeding places for all types of diseases and pests.

In connection with the increase in the height of water table and the area under water logging, it is necessary to ensure that any new project of flow irrigation is preceded by well thought out and executed schemes of drainage. In this context the tubewell system of irrigation in U.P. and Bihar appears to have advantages over flow irrigation in the interest of continued soil productivity in these areas.]

(v) *Manures and fertilisers*

The requirements of manures and fertilisers vary in different regions depending on the existing fertility status of the soil and the extent of exhaustion following repeated cropping, the basic retentive capacity of the soil for added nutrients determined by soil structure, the climatic conditions and the crop yields expected under the limiting conditions of climate, irrigation and manuring. Thus[while the requirement of nitrogenous fertilisers in Maharashtra is about 350–400 lbs./acre, in U.P. and Bihar, it is about 100–120 lbs., in Madras 150–250 lbs. and in Andhra Pradesh 100–250 lbs./acre. Further, in U.P. and Bihar the application of these fertilisers to improve productivity is limited by lack of irrigation.] Assuming that the irrigaton facilties will increase, the requirements of manures and fertilisers in the northern region would be as follows:

State/Region	Chem. fertilizer (tonnes)	Cake & stera meal (tonnes)	Green manure seed (tonnes)
(1)	(2)	(3)	(4)
Punjab	18,900	6,000	1,550
West U.P.	184,600	138,450	6,940
East U.P.	60,600	35,450	2,270
Bihar	49,610	14,880	570
TOTAL	313,370	204,780	11,330

[Sugarcane is a soil exhausting crop and unless the nutrients are replenished, the productivity cannot be maintained and naturally it is necessary to synchronise the additions of fertilisers with the increased irrigation facilites.]

[Various States have set up suitable organisations for the supply of manures and fertilisers to cane growers. While the existing distribution and credit facilities are satisfactory in some of the States, like Maharashtra, Andhra Pradesh and Madras, in some of the States like Bihar, Mysore, U.P. etc these facilities have not been as satisfactory. The general complaint is lack of timely availability of manures and the required credit facilities.]

The Committee recommends that the State Governments will remove these difficulties of the cultivator in the matter of his fertilizer requirements. The timely application of manure is very important both for raising the yield as well as improving the quality.

(vi) *Varieties*

The most important key to improve and maintain a high level of productivity in sugarcane production is a vigorous and dynamic breeding programme. The achievement of the Hawaiian Sugar industry is mainly due to the successful work done and being done in the field of sugarcane breeding. In India, the Sugarcane Breeding Institute at Coimbatore has been doing outstanding work in this field. Several varieties bred at this Institute are even today giving good results in foreign countries. Even in India, our main dependence has been on this Institute. At Pusa in Bihar and Shahjahanpur in U.P., the breeding and selection of varieties is being done on the basis of fluff supplied from Coimbatore. It has been represented by the industry that in almost all the States, particularly in U.P. and Bihar, the breeding programme is not adequate to meet the needs of these areas in the context of the rapid deterioration of varieties. The Committee notes with satisfaction, the proposal to establish two sub-stations of the Coimbatore Institute one at Motihari in Bihar and another at Lucknow in U.P., which will be concerned with building genetic material for use in breeding.

While Co419 has been the predominant variety in Maharashtra, the new variety namely Co740 has been reported to be giving very good yields and recovery while being tolerant to drought conditions. This is said to be replacing the Co419 variety in Maharashtra. The Co997 variety which is said to be suitable for early crushing has been spreading in Andhra Pradesh. This is said to tolerate water logged conditions also. Co975 variety has been recommended for the western districts of U.P. and Punjab. Co119 which is resistent to most of the strains of red rot has been released for general cultivation in U.P.

The Committee is of the view that arrangements for breeding newer varieties on a much more enhanced scale is necessary if the fall in yield and recovery, particularly in some of the northern regions, has to be arrested. The weeding of unapproved varieties should also be enforced strictly and newer promising varieties introduced even on subsidised basis, in the initial stages, if necessary.

(vii) *Plant protection*

The yield and quality of sugarcane have been considerably affected by diseases and pests to varying extents in different parts of the country. The main diseases affecting the sugarcane crop are red rot, smut and wilt. Red rot is a serious disease of sugarcane and mainly spreads through diseased seeds, infected soil and irrigation water containing spores of the fungus. The Indian Central Sugarcane Committee organised control campaigns for this disease in Bihar, U.P. and Punjab. As a result of such campaigns it is reported that the incidence of the disease has been brought down considerably during the last 3 years. However, several factories in Bihar and U.P. represented before the Committee that this campaign should be continued as this disease continues to persist. Smut and wilt which are also fungus diseases have been attacking some of the varieties though the extent of damage is at present not large. The need for introduction of varieties resistent to these diseases is important.

Of the sugarcane pests most prominent are the borers. The distribution and the intensity of attack of these borers in different States is given below—

Borer	Mild	Serious
1. Shoot borer . .	Maharashtra	Punjab, U.P., Bihar, West Bengal, Madras and Andhra Pradesh
2. Green borer . .	—	Punjab, U.P. and Bihar.
3. Pink borer . .	All States	—
4. Gurdaspur borer .	—	Punjab and U.P.
5. Stalk borer . .	Bihar	U.P. and Punjab.
6. Stem borer . .	West Bengal and Assam.	Bihar
7. Internode borer .	Northern India	Madras and Andhra Pradesh.
8. Top shoot borer .	West Bengal, Andhra Pradesh, Madras and Maharashtra.	Punjab, U.P. and Bihar.
9. Root borer . .	Mysore and Maharashtra.	Punjab, U.P., Bihar and West Bengal.

In addition, other pests like termites, pyrilla, white fly, etc., cause damages to varying extents in different years. The Gurdaspur borer is doing considerable damage to the cane crop in Punjab, Dehradun valley of U.P. and more recently in West U.P. districts also, while the shoot borers are damaging crops in North Bihar and eastern districts of U.P.

Plant protection measures to control the pests and diseases have to be intensified. Proper quarantine measures to isolate pockets of pests and disease infestation would be necessary to prevent their spreading. Well equipped plant protection squads should be stationed at suitable locations to be available at short notice. A continuous watch will have to be kept for timely identification of new pests and diseases so as to eradicate them in the earlier stages. Biological control of pests should be intensified.

(viii) *Credit facilities or production finance*

As has been discussed earlier in the report, the economic condition of the cultivator and his resources for providing the requisites for a good cane crop, to a great extent, determine the productivity. The general economic condition in the various regions would be reflected from the following figures :—

Region	Density of population per sq. km.	Per capita income Rs.
Punjab	166	451.31
West U.P.	217	326·53
East U.P.	310	258·65
Bihar	267	220·69
West Bengal	398	464·62
Assam	97	333·34
Orissa	113	276·22
Madhya Pradesh	73	285·35
Rajasthan	59	267·43
Gujarat	110	393·79
Maharasthra	128	468·54
Mysore	121	304·71
Andhra Pradesh	131	287·01
Madras	259	334·09
Pondicherry	765	N.A.
Kerala	434	314·86
All India	150	334·30

NOTE.—Density according to 1961 census; per capita income for 1960-61 at current prices according to estimates prepared by National Council of Applied Economic Research New Delhi

[It will be seen that the population pressure in East U.P. and Bihar is very high and the per capita income is very low. While the means of the cultivator can be said to be fair in the areas of Maharashtra, Mysore Madras and Andhra Pradesh, the situation is not satisfactory in the States of U.P. and Bihar. The fragmentation of holdings and a high population pressure have resulted in a very low standard of living. In the absence of suitable credit facilities, the cultivator is led to borrow against his crop at a heavy rate of interest and cannot also think of providing himself with such requisites as modern implements, sturdy bullocks or tractors, irrigation, manures, etc. It is necessary to augment the credit facilities to the cultivator by providing the necessary credit to the co-operative banks an institutions in the area. It will be necessary for the State Governments to provide the necessary security for such additional facilities. While providing these credit facilities to the grower, it should be ensured that they are given strictly for productive purposes as the cultivator in view of his lean resources is prone to fritter away such facilities into unproductive channels.]

(ix) *Research and extension service*

In the interest of sustained productivity, scientific soil and crop management etc., research is of the greatest importance. Many factories have stressed the need for sugarcane research stations in their zones and for increasing the facilities for research in the existing ones. What appears more important is the absence to varying extents of the necessary close and continuous contact between the Research Stations, the growers and the industry whom the research is expected to serve. It is also recognised that the extension of research into field practice is generally wanting. The State Governments, sugar factories and cane societies should therefore create the necessary climate for the growers to take to improved methods in their agricultural practices.

[A comprehensive research programme of soil surveys, fixing of manurial schedules, breeding of proper varieties, application of plant protection measures, etc., will have to be drawn up and executed with speed. It would be better to carry out the intensive development programme in selected areas to bring out the maximum potential. The intensive development schemes where in operation are directed towards this end. While this is very desirable, there will have to be a still more intensive programme, if necessary, even over a smaller area in which the potential as also all the requisites to achieve the potential get established. When once such a potential is established and a band of workers are trained, it will be an easy task to assess the speed with which one can go consistent with the resources of finance and personnel.]

(x) *Harvesting on maturity basis*

The best economic advantage is obtained when the cane is harvested at its peak maturity period; this will vary from variety to variety and the growth of standing crop at a particular time. It is good to pick and choose the most mature cane and allow the immature cane, time to mature. As several factors influence the maturity of cane such as variety, soil condition, manuring and irrigation, even with the planting dates being the same, there would be variation in maturity level. Therefore[a pre-harvest survey of maturity of the standing cane crop with a view to fixing the harvesting programme is a great necessity. There are however, considerable difficulies and limitations. Even so, the approach being rational, the difficulties will have to be solved in due course.]

(xi) *Payment of cane price on quality basis*

If quality of sugarcane has to be developed to the maximum extent, that the climatic and soil conditions permit payment for cane on the basis of quality is a must. In all progressive sugar producing countries of the world, sugarcane is being paid for on the basis of its quality. With high yielding varieties and with the increasing availability of irrigation and fertilisers, unless quality check and incentive are maintained, the quality of cane is bound to suffer with considerable economic set-back to the industry.

[A scheme to evolve suitable methods for introducing payment for cane on quality basis in India has been working at the National Sugar Institute for the past several years. It is understood that considerable knowledge has been gained and a stage has now been reached when the scheme in one form or the other can be introduced in different parts of the country.] It is understood that payment on quality basis to individual cultivator is possible in Madras, Maharashtra and other southern regions, where the number of cultivators supplying cane to the factories is not large. The Committee recommends that a beginning should be made by introducing the scheme at an early date in these regions. [In the northern region, where each sugar factory receives cane from a large number of growers totalling 20-50 thousand, the problem of individual assessment of quality presents considerable difficulties. These factories do not generally have mechanical handling equipments and the cane yards are small. Further, supplies are obtained at gate and by road and rail. For these areas, therefore, methods have been evolved to provide incentives on the basis of zones and groups. The Committee recommends that payment on quality basis in some form or the other might be introduced in these areas so as to make the growers quality conscious.]

सत्यमेव जयते

(xii) *Transport of cane and communications*

After taking all the precautions for growing and timely harvesting of sugarcane to ensure good sucrose content, it is necessary to transport the cane to the factory quickly, otherwise 5-10 per cent of the sugar might be lost between cutting and milling. Recovery variations up to 0.5 per cent have been reported due to delayed transport. Earlier in the report has been mentioned the extent of rail cane which is responsible for delay and consequent loss, to varying extent, due to staling. Rail transport also means double handling thereby increasing the cost of cane and loss due to pilferage.

The time lag between harvesting and crushing can be reduced by shortening the distances of cane areas from the factory so as not only to reduce the time taken in transport but to enable easier road transport. Intensification of cane areas near the factories, elimination of rail centres and

In the context of supplying fresh cane at minimum cost to the factory, development of Communications assumed great importance. The needs development of gate cane supplies to 100 per cent will save these losses.

of communications in the factory areas of different States are reproduced below :

State/Region	No. of factories reporting	Requirements of communications			Estimated cost in crores of Rs.
		pucca roads (Kms.)	Bridges No.	Culverts No.	
Punjab	7	417	126	273	3·00
West U.P.	38	2,513	184	5,890	16·69
East U.P.	33	3,119	110	4,427	20·00
Bihar	28	1,413	92	518	8·40
West Bengal	2	150	1	..	0·84
Assam	1	216	3		1·33
Madhya Pradesh . . .	3	305	..	..	1·7
Rajasthan	1	150	..	..	0·83
Gujarat	3	320	..	..	1·80
Maharashtra	14	1,544	..	..	8·50
Mysore	8	1,450	36	615	8·38
Andhra Pradesh . . .	11	1,042	10	792	6·30
Madras	9	1,965	35	424	11·23
TOTAL . . .					88·89

The Committee has observed that the communications are generally poor in all States but more particularly in U.P., Bihar Maharashtra, Mysore, Andhra Pradesh and Madras. The difficulties brought before the Committee in connection with speedier development of communications related to shortage of funds, technical staff and executive machinery. It is suggested that the assistance of the factories should be taken wherever possible in the development of communications. Development of communications in sugarcane areas will not only help the transport of cane, but of other agricultural products as well.

2.2 Reduction of manufacturing cost

The main requirements for lowering the manufacturing cost in a sugar factory are: (a) a modern plant with high efficiency and minimum losses at all stages, (b) proper maintenance of the equipment at the highest standards of efficiency by suitably trained staff with minimum time loss, and (c) minimum labour force with maximum labour productivity. The capacity of the sugar factory is also an important contributory factor in reducing the manufacturing cost. The need for reducing losses of sugar during manufacture has become even more urgent from the grower's point of view in view of the price for sugarcane being linked with recovery. The equipment and performance of the sugar units in the country have, therefore, been examined by the Committee in the light of the above requirements.

2.2.1 *Age of the factory equipment*

The number of factories in the different age groups in each regions is given below :—

State/Region	Total No. of working factories in 1962-63 season	Total No. of idle factories in 1962-63 season	Number of factories falling in the age groups (age taken upto 1963) Upto 10 years	11 to 24 years	25 to 30 years	31 to 40 years	41 to 50 years	51 to 60 years
1	2	3	4	5	6	7	8	9
1. Punjab	7	..	4	..	3	..	..	..
2. West U.P.	38	..	2	4	25	6	..	1
3. East U.P.	33	..	..	2	11	16	3	1
4. Bihar	28	1	..	..	12	8	5	3
5. West Bengal	2	..	1	..	1	..	..	
6. Assam	1	..	1	..	..	..	..	..
7. Orissa	1	..	..	..	1	..	..	..
8. Madhya Pradesh	5	1	..	2	3	..	..	..
9. Rajasthan	2	1	..	..	1	..		1
10. Gujarat	3	1	2	..	..	1	..	..
11. Maharashtra	29	1	18	7	3	1	..	..
12. Mysore	8	1	4	2	2	..	..	..
13. Andhra Pradesh	18	1	8	4	3	3	..	..
14. Madras	9	1	6	2	..	1	..	..
15. Pondicherry	1	..	1	..	..	..	..	..
16. Kerala	1	..	..	1	..	..	..	..
ALL INDIA	186	8	47	24	65	36	8	6

It will be observed that of the 186 factories working in 1963, 47 factories are below 10 years, 24 between 11 and 24 years and as many as 115 factories are more than 25 years old. Taking 25 years as the normal average life of a sugar factory equipment, for good efficiency, it may be stated that all these 115 factories are in need of major replacements. There are 36 factories between 30-40 years and 14 factories between 40 and 60 years. The figures given in the table also show that the largest number of units above 25 years are in West U.P., East U.P. and Bihar. Except for a few units almost all the units beyond 30 years are concentrated in U.P. and Bihar particularly in East U.P. and North Bihar. Maharashtra, Andhra Pradesh, Madras, Mysore and Punjab have the largest proportion of new units. Out of the 30 factories in Maharashtra 18 are under 10 years of age.

2.2.2 *Capacity*

The number of factories in different capacity groups in each region is as follows :

State/Region	No. of factories in the capacity ranges (tonnes cane per day)						
	Up to 550	551 to 800	801 to 1050	1051 to 1300	1301 to 1550	1551 to 2000	Above 2000
1	2	3	4	5	6	7	8
1. Punjab	..	..	4	2	..	..	1
2. West U.P.	1	2	4	11	7	5	8
3. East U.P.	..	10	17	2	1	2	1
4. Bihar	..	3	13	7	4	1	..
5. West Bengal	..	1	..	1	..	..	..
6. Assam	..	..	1	..	..	..	..
7. Orissa	..	1	..	..	..	..	..
8. Madhya Pradesh	1	3	1	..	..	..	..
9. Rajasthan	1	1	..	..	..	..	..
10. Gujarat	..	..	3	..	..	..	..
11. Maharashtra	1		22	3	3	1	..
12. Mysore	..	1	5	1	1	..	..
13. Andhra Pradesh	4	..	9	2	..	1	2
14. Madras	1	..	5	2	..	..	1
15. Pondicherry	..	..	..	1	..	..	..
16. Kerala	1	..	..	..	..	..	..
ALL INDIA	10	22	84	32	16	10	13

Of the 187 units in 1963, 116 factories are below 1,050 tonnes, 58 between 1,050 and 2,000 and only 13 factories are above 2,000 tonnes. The Committee has discussed later in this report, that the objective should be, to reach at the earliest a capacity of 1,500 tonnes per day and where possible higher. Taking this view, as many as, 164 factories need to be expanded depending on the cane potential and the existing capacity. The representatives of the industry in East U.P. and North Bihar pointed out that one of the factors responsible for their high cost of production was the small capacity. In the context of capacities, the following table reproduced from the report of the Indian Productivity Team is of interest.

Capacity groups	Number of factories			
	Philippines	Hawaii	Puterto Rico	India (1960)
Below 1000	4	..	..	97
1000—2000	4	16	6	61
2000—3000	4	5	3	9
Above 3000	13	6	20	1
TOTAL	25	27	29	168

The Committee endorses fully the following observation of the Productivity Team in this regard :—

> "Another striking factor which came to our notice and which has contributed greatly to the increased efficiency and productivity in the countries visited was the large size of the units of production. Because large sized units lead to decreasing cost of production and increased efficiency and productivity, the importance of raising the capacity of the existing factories in India and putting up only large sized units hereafter is obvious."

2.2.3 *Efficiency*

The following factors have been studied by the Committee for assessing the present standards of efficiency and the scope for improvement :

- (i) Reduced overall efficiency
- (ii) Total losses and scope for their reduction
- (iii) Fuel consumption
- (iv) Labour productivity
- (v) Role of technical personnel.

(i) *Reduced overall efficiency*

Apart from the efficiency of the various items of equipment in the factories, the variation in the quality of cane such as fibre per cent, sugar per cent and purity of juice influence the recovery and losses. In the figure of reduced overall efficiency the influence of quality variation is eliminated. The technical efficiency of the sugar industry in each region in respect of overall efficiency, is given in the following table :

State/Region	Number of factories falling under the efficiency groups of reduced overall extraction		
	Upto 82	From 82 to 84	Above 84
1	2	3	4
1. Punjab	..	2	4
2. West U. P.	..	11	18
3. East U. P.	10	13	7
4. Bihar	6	17	5
5. West Bengal	..	1	1
6. Assam	..	1	..
7. Orissa	1	..	..
8. Madhya Pradesh	..	4	1
9. Rajasthan	1	..	1
10. Gujarat	1	1	1
11. Maharashtra	2	10	10
12. Mysore	4	..	4
13. Andhra Pradesh	3	7	4
14. Madras	..	5	3
15. Pondicherry	..	1	..
16. Kerala	..	1	..
TOTAL	28	74	50

सत्यमेव जयते

It will be seen that of the 161 factories which have supplied the data as many as 102 factories have recorded overall extraction below 84 and only 59 are above 84. As many as 28 units have an overall extraction below 82 which is very poor.

(ii) *Total losses and scope for their reduction*

The classification of the factories according to their total losses is given in the following table :—

State/Region	No. of factories reporting	Total losses per cent cane			
		Below 2·0	2·1 to 2·5	2·6 to 3·0	Above 3·0
1. Punjab	6	Nil	4	2	Nil
2. West U. P.	29	Nil	12	17	Nil
3. East U. P.	30	Nil	4	21	5
4. Bihar	28	Nil	6	18	4
5. West Bengal . . .	2	Nil	1	1	Nil
6. Assam	1	Nil	1	Nil	Nil
7. Orissa	1	Nil	Nil	1	Nil
8. Madhya Pradesh . . .	5	Nil	1	4	Nil
9. Rajasthan	2	Nil	Nil	2	Nil
10. Gujarat	3	Nil	2	Nil	1
11. Maharashtra . . .	22	1	19	2	Nil
12. Mysore	8	Nil	3	5	Nil
13. Andhra Pradesh . . .	14	1	8	5	Nil
14. Madras	8	Nil	5	3	Nil
15. Pondicherry	1	Nil	1	Nil	Nil
16. Kerala	1	Nil	1	Nil	Nil
TOTAL .	161	2	68	81	10

It will be seen that as many as 10 factories out of 161 have recorded losses above 3.0. There is scope for reduction of loss by more than 0.5 units in these factories. As many as 81 units can reduce their losses from 0.1 to 0.5. Total loss in a carbonation factory should be about 2.3 and that in a sulphitation factory about 2.5; thus, the scope for reduction of total losses is considerable.

(iii) *Fuel consumption*

The classification of the factories on the basis of total fuel consumed in terms of bagasse per cent cane in the different States is given below :

	No. of factories reporting	No. of factories consuming fuel in terms of bagasse per cent cane			
		20—25 per cent	25—30 per cent	30—35 per cent	Above 35 per cent
	2	3	4	5	6
1. Punjab	6	..	..	5	1
2. West U. P.	29	..	1	21	7
3. East U. P.	30	..	..	5	25
4. Bihar	28	..	..	6	22
5. West Bengal . . .	..	..	..	..	..
6. Assam	..	..	..	..	..
7. Orissa	..	..	..	..	..
8. Madhya Pradesh . . .	5	..	..	2	3
9. Rajasthan	2	..	..	1	1
10. Gujarat	3	..	1	1	1
11. Maharashtra . . .	22	2	6	3	1
12. Mysore	7	..	5	..	2
13. Andhra Pradesh . . .	12	..	4	4	4
14. Madras	8	..	3	5	..
15. Pondicherry . . .	..	..	..	..	..
16. Kerala . . .	..	..	..	..	..
TOTAL	152	2	[illegible]	[illegible]	[illegible]

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It will be observed that only two factories in Maharashtra have a fuel consumption between 20–25 per cent; 30 factories in Maharashtra, Mysore, Andhra Pradesh and Madras have a fuel consumption of between 25-30 per cent; 53 factories of which 21 are in West U.P. consume between 30—35 per cent; 67 factories of which 25 are in East U.P. and 22 in Bihar and 7 in West U.P. consume above 35 per cent. Considering that it should be possible to reduce the fuel consumption to about 26.0 per cent or less in old factories, the scope for fuel economy is very great. The fuel consumption is particularly very high in those very regions where the fibre per cent is high as in East U.P. and Bihar. This high consumption is due to the old steam driven units of small capacities. Apart from reducing the cost of manufacture of sugar by exercising the utmost fuel economy, bagasse must be saved for the manufacture of paper for which cellulosic raw material is very scarce in the country.

(iv) *Labour productivity*

For purposes of assessing labour productivity, the Committee has cauculated the man days per tonne of sugar produced. The number of factories in different productivity groups in each region is given in the table below :—

State/Region	Productivity (Man days per tonne of sugar produced)			
	Upto 10·0	10·0 to 15·0	15·0 to 20·0	Above 20·0
1. Punjab	4	2	..	..
2. West U.P.	10	15	1	..
3. East U.P.	4	20	5	..
4. Bihar	4	12	6	2
5. West Bengal	1	..	..	1
6. Assam	1	..	..	..
7. Orissa	..	1	..	..
8. Madhya Pradesh	..	3	2	..
9. Rajasthan	1	..	1	..
10. Gujarat	2	..	..	1
11. Maharashtra	19	1	..	..
12. Mysore	5	2	..	..
13. Andhra Pradesh	9	2	..	2
14. Madras	4	5	..	..
15. Pondicherry	1	..	..	..
TOTAL	65	63	15	6

It will be seen that of the 149 factories studied, 65 factories have a productivity of 10 and below, 63 between 10 and 15 and 21 have got a productivity above 15. In this connection the man days requirement per tonne of sugar in some of the countries visited by the Productivity Team is as follows :—

	Man days per tonne of sugar
Philippines	2·10
Hawaii	0·58
Puerto Rico	0·64
Louisiana	0·98
India	10·42

सत्यमेव जयते

It will be seen that scope for improving productivity in India is substantial.

[*Ref.*—Report of the Indian Productivity Team on Sugar Industry (1962); page 92]

(v) ***Role of technical personnel***

Efficiency in production is also dependent on the man behind the machine. If the technical personnel engaged in production understand the principles of processing and are aware of the latest techniques, much of the time and material loss can be avoided and higher efficiency achieved thus contributing to reduction in the cost of production. The Committee has observed that the situation obtaining at present in the industry is not entirely satisfactory.

There is considerable shortage of suitably qualified engineering personnel. The Committee is of the view that since sugar factories are situated in rural areas and lack the amenities of a town, the conditions of service for the technical personnel offered by the sugar industry will have to be better than those offered by other industries in order to attract qualified people, particularly the engineering graduates. Immediate attention of the industry in this direction is necessary.

A large number of Indian sugar factories are old and outdated and of small capacities having high manufacturing losses and poor efficiency recording high fuel consumption and low productivity and lacking in suitably qualified personnel. If the cost of production has to be brought down further, the need for rehabilitation and modernisation, if possible replacement of old units with new ones of bigger capacity, expansion of existing capacities to economic size, improving labour productivity and making up the deficiency of technical personnel is inescapable.

2.2.4 *Need for rehabilitation, modernisation and expansion of uneconomic units*

From the analysis made in the preceding section, it will be observed that the highest number of uneconomic units needing maximum rehabilitation and modernisation are concentrated in East U.P. and North Bihar. Some such units also exist in West U.P., although some units in this region have partially rehabilitated and modernised while carrying out expansions allowed to them. This expansion has also improved the economy of these units though they still lack in many modern features. The Committee has from the beginning been convinced that the heavy costs involved in rehabilitation and modernisation of small units can only be justified by an appreciable expansion.

While the Committee has recommended expansion in the process of rehabilitation and modernisation, it has addressed itself to the problem of what should be the expenditure, which may render the unit economic in so far as the capacity is concerned. In a free economy, the economic capacity would be determined by the average capacity or even better, by the capacity of the largest number of units in the region. Naturally in a competing economy, this average would represent the survival capacity. The Committee has also appreciated that the economic capacity is not static. In a free economy, capacity rises at a faster rate. In most of the sugar producing countries, history reveals that economy in production and meeting of increased demand has been met by increases in the capacity of the existing units and not by multiplication of small units. In a controlled economy, which in a way is protected, the uneconomic capacity is that which is below the average taken in the cost schedule. In the light of the above and in the context of present capacities obtaining in the country, the Committee is of the view that a capacity of 1,500 tonnes would be a fairly economic capacity under the conditions prevailing at present in India. While, therefore, this 1,500 tonnes should be the minimum target for expanding the existing units, new units should have a starting capacity of 1,500 or 2,000 tonnes with provisions for expansion to 3,000—4,000 tonnes.

The Committee's approach to expansion of capacity in the context of rehabilitation and modernisation under conditions of limited financial resources has, however, been to phase it in such a way that the first phase of expansion is up to the maximum capacity permitted by the existing milling units, with such modifications and additions as may be necessary keeping the cost involved to the minimum possible. Where however, the milling units are too small and too old to permit of any substantial expansion coupled with efficiency, a new milling unit will have to be added. Even in those cases where, in the first phase, the expansion has been limited, the milling units will have to be changed into bigger sized ones in the second phase, to the extent the cane potential in the area will permit, the aim being to reach the economic capacity of 1,500 tonnes in the shortest possible time. Where funds are available and permit new bigger plants to be put up that would be a much better proposition than incurring heavy expenditure on rehabilitation and modernisation of old units.

Where two or more small capacity old and out-dated units with high cost of production are located near together and adequate cane potential to meet expansion to economic sizes in each case does not exist, the Committee is of the view that such units should be merged and a new bigger plant equivalent to the combined capacity of the merged units should be installed. It would be preferable to have a new bigger factory rather than to rehabilitate and modernise two or more small uneconomic factories without any expansion.

The needs of rehabilitation and modernisation would naturally depend on the present condition of the machinery, its age, standard of maintenance and the factor of safety provided by the original machinery makers and to what extent this factor has been encroached upon by the factory in its attempts at increasing production. Furthermore obsolescence is another factor which will have to be taken into account while assessing the needs of rehabilitation and modernisation. Even if some of the equipments still have a few years longer life, they may not fit in the scheme of modernisation. There is thus quite a large degree of variation in the needs of rehabilitation and modernisation of different factories.

(a) *Assessment of rehabilitation and modernisation costs*

The cost involved in rehabilitation and modernisation of uneconomic units in the country has been a matter of discussion before the Development Council. The Council highlighted the difficulties in the assessment of the rehabilitation and modernisation needs and also observed that investment on rehabilitation and modernisation of the present small units without appreciable expansions simultaneously would not be worthwhile. This Committee agrees with the above view and accordingly recommends that expansions be allowed to the maximum capacity permissible by the existing milling units along with rehabilitation and modernisation. The assessment of cost made by the Committee relates to rehabilitation and modernisation of individual units in the first phase only. The extent of expansion considered practicable in the first phase in individual units and the cost of rehabilitation, modernisation and expansion for the various units in each State are given in the reports of the States. The resulting expansion of capacity in each region and the total cost involved is given below :

Sl. No.	State/Region	No. of working factories in 1962-63	Total cane crushing capacity (tonnes/ day) of factories given in column 3 in 1963-64	Total cane crushing capacity after expansion as recommended by the Committee (tonnes/ day)	Increase in capacity (tonnes/ day)	Cost in crores of Rs. as estimated by the Committee	No. of factories covered in the cost estimates who supplied data
1	2	3	4	5	6	7	8
1.	Punjab	7	9,753	12,470	2,717	2·0	6
2.	West U.P.	38	59,894	75,044	15,150	12·2	31
3.	East U. P.	33	31,647	44,622	12,975	16·0	31
4.	Bihar	28	30,262	39,683	9,421	12·5	28
5.	West Bengal	2	1,829	1,829	..	..	..
6.	Assam	1	1,016	1,300	284	0·1	1
7.	Orissa	1	610	610	..	..	..
8.	Madhya Pradesh	5	3,353	4,916	1,563	1·7	4
9.	Rajasthan	2	1,118	2,450	1,332	1·1	2
10.	Gujarat	3	2,845	4,200	1,355	1·7	3
11.	Maharashtra	30	31,699	45,004	13,305	10·1	26
12.	Mysore	8	7,773	14,500	6,727	4·3	8
13.	Andhra Pradesh	18	19,711	28,142	8,431	7·5	18
14.	Madras	9	9,540	12,204	2,664	2·4	6
15.	Pondicherry	1	1,219	1,500	281	0·4	1
16.	Kerala	1	508	508	..	..	..
	ALL INDIA	187	212,777	288,982	76,205	72·0	165

*Includes the data in respect of Belvandi factory also which did not work in 1962-63 but was studied by the Committee.

NOTE.—Column 5 includes the expanded capacities of the factories studied by the Committee (their number is given in column 8) plus the existing capacities of the remaining factories.

It will be seen that expansion in daily cane crushing capacity envisaged by the Committee on account of rehabilitation, modernisation and expansion of 165 factories is of the order of 76,205 tonnes. Assuming an average duration of 130 days and a recovery of 10.00 per cent, the increase in sugar production per annum would be of the order of 9.9 lac tonnes. It is expected that this increase in capacity would be achieved in 8-10 years.

The capacity level of factories by rehabilitation, modernisation and expansion would be raised as given below :

Particulars	No. of factories in capacity groups			
	Upto 1050 tonnes day	1051 to 1550 tonnes/ day	1551 to 2000 tonnes/ day	Above 2000 tonnes/ day
Before rehabilitation	116	50	8	13
After rehabilitation	29	103	31	24

The total cost for rehabilitation, modernisation and expansion comes to Rs. 72 crores. This is only the cost of additional machinery; to this will have to be added about 25 per cent of the total cost for erection, changes in pipe lines, other changes in layout etc. and possible increase in the cost of machinery in the next five years. The overall expenditure would then be of the order of Rs. 90 crores.

(b) *Problems involved in rehabilitation of old units*

The process of rehabilitation and modernisation of old and outdated equipment is beset with several problems such as :

(i) insufficiency of space and structure for expansion or modernisation.

(ii) need for further expansion of capacity in future years.

(iii) matching old units with new ones.

(iv) need for replacing low pressure boilers with high pressure ones for driving modern mills and semi-electrification purposes involving heavy cost.

(v) time-lag necessary for existing workers to pick up the operation of modern units.

(i) *Insufficiency of space and structure for expansion or modernisation.*

Sugar manufacture is a highly complicated process. Process flow has to be streamlined and synchronised with the various unit operations and the various units of plant and machinery have to be balanced for a particular capacity. Problems of steam and power generation and their utilisation have to be gone into carefully. Most of the old plants are steam driven with low pressure boilers. They started as small plants of about 400 tonnes capacity and in the process of expansion to the present level of 800-1,000 tonnes have installed new equipment in haphazard manner within the small space in which the original small plant was set up. Buildings will, therefore, have to be extended and modified in area as well as height. This would involve strengthening of the supporting structure and the foundations. It would be uneconomic and undesirable to add more units of small sizes to make up the capacity. It would be more economical to put up a few big new plants. The next problem would be the size of the new plant.

(ii) *Need for further expansion of capacity in future years*

With the concept of the present day economic size and the trends for further increases in the average capacity, at least some provision will have to be made to take care of further demands on capacity consistent with maintenance of efficiency.

(iii) *Matching old units with new ones*

Apart from the question of additions and modifications to buildings and adding up the equipment, more serious problems of matching the old units with the new ones would arise.

(iv) *Need for replacement of low pressure boilers with high pressure ones* :

Further, the modernisation of certain equipments will necessitate a simultaneous attention being paid to some other aspects. For instance, many factories have low pressure boilers of 100-125 lbs/sq. inch steam pressure, as against the modern boilers of 300 lbs./sq. inch and higher. The old boilers are inefficient. They do not have heat economy attachments like economisers and superheaters and the cost involved in adding these heat recovery units to the old boilers would be prohibitive; it will be economical to replace them by new modern units which would also give efficient service for a number of years after installation.

One of the essentials of modernisation of old uneconomic units, which are steam driven, is electrification. This would mean addition of turbo-alternators. For proper steam economy the turbo-alternators will need high pressure boilers. The next step for efficient and economic working will be to put proper electric load on the generator. For this, the various drives in the factory will have to be electrified and motors of various capacities will have to be purchased and with it the pumps, drives, etc. A boiler and a turbo-alternator and the various motors and pumps would themselves need between 30—40 lac of rupees depending on the capacity of the unit. Similarly, a modern milling plant is turbine driven and will have to be linked up to a high pressure boiler for efficient performance.

The expenditure on rehabilitation and modernisation would thus involve not only replacement of the wornout and small capacity units in a factory, but also an appreciable portion of the equipment, which may still have some life. Replacements would in several cases involve rearrangement of existing and new machinery, building and digging out of old foundations etc. The Committee has inspected a number of uneconomic factories in which the financial requirements of rehabilitation and modernisation are very heavy. Even after this heavy investment, it is possible that the efficiency desired may not be achieved as it is difficult to predict which limb of the remaining old and fatigued unit would give way and upset the working of all the units—new and old. Apart from this uncertainty, the heavy rehabilitation and modernisation programme would have to be necessarily phased in view of the limited time available in the off-season, and the likely delays in the delivery of machinery, procurement of cement, steel etc. The old machinery cannot be disturbed until the new one has arrived. When the new one arrives, the time left for dismantling the old one and erecting the new one may be too short and the equipment will have to remain idle till the next off-season.

(v) *Time lag necessary for existing workers to pick up the operation of modern units* :

Another important problem that should not be lost sight of is the skill and capacity on the existing staff and workers. The present workers of the factories generally do not have the knowledge and experience of working modern equipment. There will be considerable difficulty in synchronising the working of the new equipment and process in the transition stage and it will take some time before the workers get trained to work the new equipment. The Committee would thus sound a caution that uneconomic units wishing to rehabilitate should carefully assess as to whether the installation of a bigger completely new plant or the renewal, modernisation or expansion of the old plant would bring an assured return from the heavy investment involved.

(c) *Merging*

In pursuance of its terms of reference, the Committee has carried out an exercise to see what picture would emerge, if the very closely situated units are merged and replaced with single units of bigger capacity. The total cost of such replacement as against the cost of rehabilitation, modernisation and expansion of individual units is shown in the following table :

Name of factories	Their existing capacity (tonnes/ day)	Expanded capacity or as recommended (tonnes/ day)	Proposed capacity of new single unit (tonnes/ day)	Cost of expansion & moderni-sation if done indivi-dually (Rs. in crores)	Cost of single new unit of bigger capacity (Rs. in crores)
1	2	3	4	5	6
East U. P.					
Barabanki	806	1,200	2,200	0·92	1·60
Burhwal	813	1,000			
Tulsipur	904	1,300	2,600	0·94	1·80
Balrampur	904	1,300			
Khalilabad	559	1,000	2,000	1·06	1·60
Munderwa	711	1,000			
Deoria	965	1,300	2,600	1·02	1·80
Baitalpur	914	1,300			
Khadda	773	1,000	2,200	1·04	1·60
Chhitauni	813	1,200			
Siswabazar	559	1,200	2,400	0·88	1·80
Ghughli	1,016	1,200			
Lakshmiganj	744	1,200	2,500	0·93	1·80
Captainganj	970	1,250			
Padrauna	1,016	1,500	2,500	1·08	1·80
Kathkuiyan	610	1,000			
Basti	1,025	51,00	3,000	1·81	2·10
Walterganj	772	1,500			
Ramkola (P)	1,524	2,000	3,200	1·03	2·10
Ramkola (MK)	791	1,200			
West U. P.					
Raza	1,168	1,500	3,000	0·72	2·10
Buland	1,016	1,500			
Sarsawa	1,219	1,219	3,000	0·88	2·10
Saharanpur	1,321	1,800			
Modinagar	1,067	1,200	2,400	0·56	1·80
Mohiuddinpur	1,158	1,158			
Sakhotitanda	1,118	1,400	3,700	0·87	2·80
Khatauli	2,032	2,300			
Meerut	1,219	1,219	4,200	1·31	3·00
Daurala	1,422	3,000			

1	2	3	4	5	6
Bihar					
Sidhwalia	660	1,000	2,500	0·87	1·80
Harkhua	813	1,500			
Siwan (New Savan) . .	914	1,200	2,500	0·92	1·80
Siwan (Indian) . . .	711	N.A.			
Sugauli	914	1,200	2,700	1·43	2·00
Motihari	1,016	1,500			
Lohat	1,321	1,321	3,500	0·91	2·50
Sakri	813	1,000			
Ryam	791	1,250			
Barrahchakia . . .	947	1,500	3,500	1·16	2·50
Motipur	1,219	2,000			
Narkatiaganj . . .	1,219	1,300	2,800	0·99	2·00
Chanpatia	884	1,500			
Guraru	864	864	2,000	0·54	1·60
Waisaliganj . . .	711	1,000			
West Bengal					
Plassey	1,219	—	2,000	0·60	1·60
Beldanga	750	—			
Madhya Pradesh					
Jaora	1,016	1,016	2,400	1·00	1·80
Mehidpur Road . . .	305	800			
Dalauda	559	600			
Maharashtra					
Phaltan (Sriram) . .	1,016	1,200	2,700	1·05	2·00
Phaltan (Sakharwadi) . .	813	1,500			
Sanjivani (Takli) . .	1,016	N.A.	3,000	0·50	2·10
Kopergaon	1,016	1,800			
Ravalgaon	1,219	1,219	2,200	0·09	1·60
Girna	1,016	1,016			
Saswadmali	1,016	1,200	2,500	0·45	1·80
Akluj	1,016	N.A.			
Rahuri	1,219	1,500	2,700	0·80	2·00
Ganeshnagar	1,016	1,250			
Sakarwadi	1,016	N.A.	2,500	0·75	1·80
Changdeonagar . . .	813	1,250			
Mysore					
Munirabad	610	1,000	2,500	0·84	1·80
Hospet	1,016	1,500			
Andhra Pradesh					
Seethanagaram . . .	305	1,000	2,000	0·97	1·60
Bobbili	457	1,000			
Samalkot	813	1,200	2,500	0·69	1·80
Pithapuram	1,016	1,300			
Chagallu	813	1,250	2,500	0·41	1·80
Tanaku	1,270	1,270			
				30·02	65·70

It will be seen that instead of 70 units, most of which are below 1,200 tonnes capacity, there would be only 34 units of capacities ranging from 2,000 to 4,200 tonnes. The total cost of these 34 single new units would be Rs. 65.7 crores as against the total cost of expansion and modernisation of individual units of Rs. 30.02 crores. While in the former case the new units would be more efficient, have a long life of 25-30 years, would incur much less cost on maintenance and would be capable of considerable further expansion, the old units even if modernised would not be as efficient as the new ones, would incur more cost on maintenance, would have limited scope for future expansion and would have difficulties in cane supply. Most of these 70 factories are very old and uneconomic and have outlived their normal life. Besides the above advantages, the new units will have better potentialities for development of by-product industries and the workers' colonies can also be improved and better amenities provided. The consequential problem of surplus labour would be solved by absorbing it in the by-product industries which will have to be developed simultaneously. Even if this does not happen, the new factories would be so efficient and their profitability would be so substantial as to tolerate even the extra labour load.

While the factory managements in a large number of cases fully agreed with the Committee on the desirability of putting up completely new plants, they pleaded their inability to undertake such a huge investment programme in view of their inability to find the finance and diffidence in respect of adequate returns from such investment. They also felt that their financial conditions did not permit them to completely scrap the existing equipment, which still had some value.

The Committee has given considerable thought to this and feels that if finance can be made available, it would be in the interest of the industry and the economy of the region to instal new plants of bigger capacities by merging present small sized closeby factories facing financial difficulties and hampering production.

The Committee would recommend that to begin with, the following units, which belong to the same managements, should be allowed to merge and have single large sized units :—

1. Raza and Buland.
2. Basti and Walterganj
3. Kathkuiyan and Padrauna
4. Deoria and Baitalpur
5. Sakri and Lohat
6. Munirabad and Hospet
7. Seethanagaram and Bobbili.

2.2.5 *Surplus labour*

In the replies to the questionnaire and their discussions with the Committee, sugar factories generally referred to the surplus labour already employed by them. In fact, they attributed their uneconomic conditions to a large extent to existence of surplus labour and the aggravation of the position due to implementation of Wage Board recommendations. At the requested of the Committee the factories supplied information on the surplus labour employed at present by them and that likely to become surplus after the modernisation schemes are implemented. The position is summarised in the following table :—

Sl. No.	State/Region	No. of factories reporting	Total No. of workers	No. of factories having surplus workers	No. of surplus workers at present	No. of factories reporting surplus labour after modernisation	Surplus labour after modernisation
1.	West U.P.	26	34,370	10	899	13	2,049
2.	East U.P.	29	31,232	15	2,034	22	3,976
3.	Bihar	24	26,105	13	2,588	17	3,135
4.	Madhya Pradesh	5	4,505	2	303	2	332
5.	Maharashtra	22	15,930	2	129	6	259
6.	Mysore	7	5,621	2	260	N.A.	N.A.
7.	Andhra Pradesh	13	6,618	2	71	2	71
8.	Madras	9	6,891	2	36	2	374
	TOTAL	135	131,272	48	6,320	64	10,196

It will be observed from the above table that in all, 48 factories have reported that they have a surplus of 6,320 workers with them. The largest number of surplus labour is in East U.P. and Bihar. Incidentally it is in these regions that the largest number of uneconomic units also exist. The labour estimated by 64 factories to become surplus after modernisation is 10,196.

Some of this surplus labour would automatically get reduced by the process of natural wastage, old age pension, etc. It has already been estimated that the total finance involved in rehabilitation and modernisation will be of the order of Rs. 72 crores by way of equipment and another 18 crores for other incidental expenditure. When the factories are modernised and expanded in capacity, by-product industries are bound to develop and the Committee feels that most of this surplus labour would be absorbed.

2.2.6 *Utilisation of by-products*

The scope for reduction in costs by fuller utilisation of by-products of the sugar industry is considerable. The main by-products of the sugar industry are :

(a) Bagasse
(b) Molasses
(c) Press mud.

The position in respect of each is discussed below :

(a) *Bagasse* :

Bagasse is increasingly becoming valuable for its cellulose content and with the decreasing forest resources of bamboo and other pulping woods and with the rapidly increasing demand for paper in the country, there is no doubt that bagasse holds promise of a regular supply of raw material to the paper industry in this country. That good quality paper can be produced entirely based on bagasse has been established and several factories have been working in foreign countries. Recently a team representing sugar factory interests in Maharashtra visited the United States and neighbouring countries with a view to ascertaining the feasibility of starting bagasse based paper factories in Maharashtra on the basis of substituting the bagasse with alternative fuel like coal or furnace oil. It is understood that the possibility of such projects becoming successful has been confirmed. An American team of machinery suppliers has also since visited this country in connection with the establishment of bagasse based paper factories.

Some factories utilising bagasse for paper such as Rohtas Industries at Dalmianagar, Mandya Paper Mills in Mysore, Seshashayee Paper Mills near Mettur and Jaswant Sugar Mills, Meerut are working for some years utilising various percentages of bagasse. It is also understood that some projects of bagasse based paper which were licensed have not made satisfactory progress due to the heavy investments involved. After studying the scope for saving bagasse in the northern region and the serious shortage of cellulosic raw materials for the paper industry, the Committee recommends an integrated approach to start simultaneously the process of rehabilitation, modernisation and expansion or complete new units in place of a group of old mills in definite specified regions and to locate paper projects based on bagasse so that the saved bagasse from the modernised units can automatically flow into these paper plants. When once this is established, the capacity of the paper units can be expanded, provision having been made earlier, on the basis of substituting partially or wholly the bagasse by substitute fuel wherever possible by coal or oil. The Committee favours the starting of projects based on saved fuel in the first instance as the solution to the problems connected with an assured supply of the substitute fuel would be necessary when dealing with a perishable raw material like sugarcane. There might arise the problem of bagasse disposal if as a result of investment in modernisation, large quantities of bagasse are saved and there is no profitable outlet for it. There are several factories which have already started saving large quantities of bagasse, the disposal of which has become a serious problem. Not only there is no market but considerable expenditure is involved in baling and handling of bagasse in addition to risks of fire. These difficulties are becoming serious deterrent to modernisation and bagasse saving. A coordinated appraoch between the different interests appear to be urgent and necessary, if the potential value of this bagasse is to be fully availed of to reduce cost of sugar production. Adequate incentives should also be given for bagasse based paper and other products for a speedy exploitation of this potential.

The bagasse production is dependent on the fibre content of sugarcane which varies from 10–14 per cent in Maharashtra and South and from 14–18 per cent in the North. The bagasse production accordingly varies from 24–30 per cent in the low fibre region and from 30–36 per cent on cane in the high fibre region. Bulk of the bagasse is burnt for steam and power generation by the factories. In fact, in addition to bagasse, considerable quantities of extra fuel are used in both the regions. The installation of modern plants recently has, however, demonstrated that sizeable quantities of bagasse can be saved even in the low fibre region. In North also some factories have started saving bagasse after balancing and modernisation. The fuel requirements for a madern sugar factory should be around 26 per cent bagasse on cane. While, therefore, there can be some small saving of bagasse by eliminating extra fuel in Maharashtra and South, the quantities of bagasse that can be saved in the high fibre regions of the North is large, namely, 8–10 per cent on the cane crushed. This saved bagasse from a number of nearby factories can feed an economic sized paper mill. The factories situated at long distances can convert the saved bagasse into pulp and send it to a central paper factory or set up small card-board, particle-board or chip-board plants.

The table giving the quantities produced and that which can be saved by modernisation of units is given below:

State/Region	Av. fibre % cane	Bagasse per cent cane	Bagasse produced Lac tonnes	Estimated optimum Bagasse consumed @26% lac tonnes	Bagasse saving potential tonnes	No. of 100 tonnes paper units possible
1	2	3	4	5	6	7
1. Punjab	15·2	32·3	3·61	2·91	70,000	—
2. West U.P.	15·3	33·3	31·00	24·20	680,000	3
3. East U.P.	16·6	35·1	13·91	10·30	361,000	2
4. Bihar	17·1	36·3	12·69	9·09	360,000	2
5. West Bengal	16·3	33·4	0·32	0·25	7,000	—
6. Assam	12·6	27·5	0·16	0·15	1,000	—
7. Orissa	13·6	29·2	0·09	0·08	1,000	—
8. Madhya Pradesh	15·5	32·0	0·94	0·76	18,000	—
9. Rajasthan	13·7	30·2	0·43	0·37	6,000	—
10. Gujarat	13·0	26·3	0·23	—	—	—
11. Maharashtra	12·3	25·7	8·73	—	—	—
12. Mysore	12·3	27·2	2·24	2·14	10,000	—
13. Andhra Pradesh	12·6	27·2	3·85	3·68	17,000	—
14. Madras	14·2	29·6	2·72	2·39	33,000	—
15. Kerala	12·5	26·2	0·32	—	—	—
ALL INDIA	15·2	32·4	81·24	—	1564,000	7

It will be seen that on the basis of saved bagasse there is scope for three paper factories in West U.P., two factories in East U.P. and two factories in Bihar. The scope for bagasse based paper projets is however great in all the regions on the basis of satisfactory and dependable arrangements for substitute fuel for bagasse. It is understood that one such is shortly to be established in Maharashtra based on substituted bagasse from a number of adjoining units.

The Committee understands that a number of schemes for the manufacture of paper, board etc. involving the use of bagasse have been licensed. A license for a 30,000 tonnes per year newsprint project in Uttar Pradesh has also been granted. These schemes, however, are not making much headway. The Committee suggests that the causes for delay may be examined by the authorities concerned at an early date.

(b) *Molasses*:

Mollasses is one of the most important by-products of the sugar industry. At present it is the only by-product which is giving some return, however small, which is being accounted for in the cost of production of sugar.

The most important use to which molasses is being put in India is for the production of industrial alcohol. At present, most of the industrial alcohol produced in the country is going to various alcohol based industries. An appreciable percentage of molasses is also used for tobacco curing, etc. Production of industrial alcohol to feed the various alcohol based industries in the country appears to be the only rational approach to the utilisation of molasses. With the production of raw sugar in the country another rational approach, perhaps a better approach, would be to use the raw sugar molasses for cattle feed purposes. There has been a suggestion to use raw sugar molasses as pig-feed in view of the possibilities of export of pigs to some South-East Asian countries. This suggestion merits attention.

The present installed capacity of distilleries in India, actual alcohol production, actual molasses production and alcohol production potential from it are given in the table below :—

State/Region	Total installed capacity in million gallons	Actual alcohol production (average of 4 years) in million gallons	Molasses production (average of 4 years) in thousand tonnes	Alcohol production potential in million gallons	Capacity installed surplus (+) or deficit(—) (col. 2—col. 5) in million gallons
1	2	3	4	5	6
1. Punjab	3·1	0·28	39	1·87	(+) 1·29
2. Uttar Pradesh	33·94	14·36	462	22·18	(+)11·76
3. Bihar	3·44	0·81	131	6·29	(—) 2·85
4. West Bengal	1·38	0·14	6	0·29	(+) 1·10
5. Assam	—	—	3	0·14	(—) 0·14
6. Orissa	—	—	2	0·10	(—) 0·10
7. Madhya Pradesh	1·50	0·02	14	0·67	(+) 0·83
8. Rajasthan	1·21	0·21	7	0·34	(+) 0·87
9. Gujarat	—	—	11	0·53	(—) 0·53
10. Maharashtra	15·52	3·59	155	7·44	(+) 8·08
11. Mysore	3·78	0·75	45	2·16	(+) 1·62
12. Andhra Pradesh	6·61	1·95	74	3·55	(+) 3·06
13. Madras	3·35	0·28	59	2·83	(+) 0·52
14. Pondicherry 15. Kerala	0·80	0·18	5	0·24	(+) 0·56
ALL INDIA	74·70	22·57	1013	48·63	(+)26·07

It will be seen that the installed capacity is for 74.7 million gallons while the actual average alcohol production (average of last four years) is only 22.57 million gallons or 30.2 per cent of the installed capacity. It can be seen from column 6, that except in Bihar where there is scope for about three million gallons of alcohol production capacity, other States are surplus in the installed capacity. The present installed capacity in other States can possibly take care of the increased production of molasses in the Fourth Plan. In spite of the high installed capacity and the need for alcohol by the alcohol based industries, there have been reports of shortage of alcohol for the alcohol based industries due to shortage of molasses for the distilleries. In several States considerable wastage of molasses has been reported due to lack of storage facilities and proper transport. It is very necessary that adequate arrangements are made for molasses storage both at the sugar factories and the distilleries and the maximum quantity of molasses diverted for alcohol production. Where, however, molasses cannot be lifted for purposes of alcohol production, many factories have represented that they should be allowed to sell the molasses at the market rate instead of having to sell at the controlled rate of parties who take advantage of the difference between the controlled rate and the prevailing market rate. This appears to be a reasonable demand, as the extra income from the open market rates, particularly for the uneconomic units would go to relieve the stress on their financial condition.

The question of augmenting the controlled price of molasses for reducing the cost of sugar has also been raised. The Committee is of the view that the margin of profit enjoyed by alcohol based industries should be examined and if there is scope for them to pay a higher price for alcohol, so that alcohol distilleries can pay a higher price for molasses, the price of molasses should be raised to the extent permissible. The controlled price of molasses was fixed a long time ago and it is time a fresh examination was made.

(c) *Press mud* :

The third by-product from the sugar factories is the press mud. The press mud in the sulphitation factories varies from 2.5 to 3 per cent on cane with a moisture content of about 65 per cent and that of carbonation factories varies from 6–7 per cent on cane. Out of the 187 sugar factories in the country working in 1962-63, only 37 followed the carbonation process and the rest the sulphitation process.

The sulphitation press mud is being increasingly used as a valuable manure. This press mud has a very valuable ingredient in the form of sugarcane wax varying from 8 per cent to 20 per cent on dry basis. The table given below gives the results of a survey carried out by the National Sugar Institute, Kanpur, in respect of wax content of sulphitation press mud in various regions in the country.

Sl. No.	Regions	Average wax content per cent dry press mud	Percentage of hard wax	Percentage of soft wax
1.	North Bihar	12·3	77·5	22·5
2.	East U.P.	13·1	46·1	53·9
3.	Central U.P.	15·2	69·6	30·4
4.	West U.P.	11·2	70·2	29·8
5.	Maharashtra	8·7	54·0	46·0
6.	Madhya Pradesh	10·0	36·0	64·0
7.	Andhra	20·9	21·8	78·2
8.	Madras	17·3	59·2	40·8

Source : Sharkara Vol. 5, 1962.

The hard portion of the wax is used for the manufacture of various types of polishes, carbon paper, emulsions for fruit preservation and for water proofing. The soft portion of the wax has been found to be rich in sterols which forms the basis for the manufacture of harmones.

With the increasing shortage of vegetable waxes in the world, sugarcane wax promises to be a very good source for meeting the demands for wax in the country as well as for export purposes. At present considerable quantities of Carnuba and Montane waxes are being imported into India.

There are so far only two wax recovery units in the country one at Vuyyuru and the other at Ravalgaon. The market for sugarcane wax has not yet developed as considerable work has to be done on the fractionation, bleaching and modification of the cane-wax to meet the various specified uses. The Committee strongly recommends collaborative efforts between the Government and the industry for putting up a continuous wax recovery-*cum*-refining unit and working out schemes for the modification of wax to suit the different end uses. This potential for reducing the cost of production of sugar has to be exploited early. With the removal of wax, the manurial value of the mud also increases.

Proper use for the press mud of carbonation factories has not been developed as yet. It finds useful application on some acidic and calcium deficient soils. The disposal of the carbonation press mud presents serious handling and transport problems. Experiments for its use in cement and also for its regeneration for reuse in sugar manufacture have not yet proved quite successful for large scale adoption. It is understood that this mud is being successfully used in Dalmianagar in cement manufacture. However, more intensive research work on the use of carbonation press mud is recommended.

3. Overall Financial Implications of Rehabilitation

In trying to assess the financial requirements for the rehabilitation of the sugar industry, the Committee examined the various aspects which have a bearing on rehabilitation. Mere modernisation and expansion of units would be meaningless without adequate availability of raw material of proper quality. Therefore together with the financial requirements of modernisation and/or expansion, the finance required for cane development and communications was also estimated. This required hurried blue prints to be made of individual factories and their areas and of the regions or States as a whole. This was an helpful exercise for the factories and the State Governments, as this, incidentally enabled them, for the first time perhaps, to obtain an objective assessment of their needs. Whilst the figures supplied may not be very accurate and may be near estimates only, they have been sufficient to present a discernible picture. The financial requirements for various purposes in the various regions are as follows:—

(In crores of rupees)

State/Region	Rehabilitation modernisation & expansion	Irrigation (including loan and subsidy)	Development of communications	Manures & fertilisers (loan)	Cane seed (subsidy)	Miscellaneous
1	2	3	4	5	6	7
1. Punjab	2·0	12·3	3·00	N.A.	N.A.	..
2. West U.P.	12·2	30·0	16·69	2·75	1·09	..
3. East U.P.	16·0	15·2	20·00	0·90	0·36	..
4. Bihar	12·5	12·7	8·40	N.A.	N.A.	..
5. West Bengal	..	N.A.	0·84	N.A.	N.A.	..
6. Assam	0·1	..	1·22	N.A.	N.A.	0·28
7. Madhya Pradesh	1·7	N.A.	1·70	..	N.A.	..
8. Rajasthan	1·1	N.A.	0·83	N.A.	N.A.	..
9. Gujarat	1·7	N.A.	1·80	N.A.	N.A.	..
10. Maharasthra	10·1	N.A.	8·50	N.A.	N.A.	..
11. Mysore	4·3	N.A.	8·38	N.A.	N.A.	..
12. Andhra	7·5	8·5	6·30	N.A.	N.A.	..
13. Madras	2·4	0·6	11·23	..	..	—
14. Pondicherry	0·4	..	..	..	..	—
TOTAL	72·0	79·3	88·89	3·65	1·45	0·28

N.A. =Not available

It will be seen that the finance required for adding or replacement of machinery for modernisation and expansion is of the order of Rs. 72.0 crores.

To this must be added 25 per cent for erection, shifting, change of pipe lines etc., which brings the total to about Rs. 90.0 crores.

For irrigation the expenditure would be of the order of Rs. 80 crores but this would be mostly in the form of loan, which would be recoverable.

For communications the financial requirement is again of the order of Rs. 90.0 crores. This will be contributed one-third by the Centre, one-third by the State Governments and one-third by the beneficiaries.

Expenditure by way of loan on manures and fertilisers in U.P. only will be of the order of Rs. 3.7 crores and subsidy on cane seed for popularising new varieties will be Rs. 1.5 crores. The above financial requirements would appear to be large, but all the same, the assessment of the situation by the Committee indicates that they are necessary and urgent and should be provided to improve the economy of the regions.

We are planning for the country's development and planning to invest heavy amounts on industrial developments. While we spend on the development of new industries, we have also to see that existing industries do not prove a burden on the country's economy. The sugar industry is not only the second largest industry of the country but is in the real sense an agro-based industry situated in rural areas. On its efficient performance depends the well being of entire regions and of millions of cultivators and a large number of workers. It would therefore be necessary to so shape this industry as to derive the maximum benefit from it in the country's economy. Considering the size of investment in some of the other industries, the requirements of the sugar industry do not appear to be that large. In the overall planning therefore, it is important that this position of the sugar industry is appreciated and adequate provisions are made on priority basis.

4. Measures for the Rehabilitation of the Sugar Industry

4.1 The Present Economic Position of the Industry

A study of the foregoing pages leads to the inescapable conclusion that if the problems of the sugar industry have to be solved on a permanent basis and a self generating economy brought into existence, a determined approach will be necessary for implementing the rehabilitation and modernisation programme of the industry. The industry however represented that its present resources were grossly inadequate to meet the requirements of rehabilitation.

The Committee therefore, examined the present position of sugar factories in the different regions in respect of nature of ownership, growth of gross block, present net fixed assets, net available resources and profitability as revealed from their Balance Sheets against the needs of rehabilitation and modernisation.

4.1.1 *Ownership*

The table below gives the nature of ownership of the sugar factories working in 1961-62.

State/Region	Public Limited	Private Limited	Coopera-tives	Partnership/ Proprietor-ships	Total
1. Punjab . .	3	..	4	..	7
2. West U.P. . .	21	8	3	6	38
3. East U.P. . .	20	11	..	2	33
4. Bihar . .	23	4	..	1	28
5. West Bengal .	2	..	..	..	2
6. Aassam . .	..	..	1	..	1
7. Orissa . .	1	..	..	..	1
8. Madhya Pradesh	3	1	..	1	5
9. Rajasthan . .	2	..	..	..	2
10. Gujarat . .	..	..	3	..	3
11. Maharashtra .	11	1	18	..	30
12. Mysore . .	4	1	3	..	8
13. Andhra Pradesh	11	..	7	..	18
14. Madras . .	6	..	3	..	9
15. Pondicherry .	1	..	..	..	1
16. Kerala . .	1	..	..	..	1
ALL INDIA .	109	26	42	10	187

It will be observed that of the 187 factories as many as 109 are public limited, 26 private limited, 42 co-operatives and 10 partnership or proprietary concerns. The private limited and partnership enterprises are mostly in U.P. and Bihar; the co-operatives predominate in Maharashtra, Andhra Pradesh, Punjab, Gujarat and Mysore.

4.1.2 *Growth of assets*

The total gross investment in fixed assets in the sugar industry was Rs. 169 crores up to 1961-62. Of this, depreciation amounts to Rs. 67 crores leaving the net fixed assets at Rs. 102 crores. The table below shows the growth of gross fixed assets in various regions.

सत्यमेव जयते

State/Region	Total value of gross fixed assets (Rs. crores)		
	1953-54	1957-58	1961-62
1. Punjab	1·1	5·9	7·2
2. West U.P.	15·6	28·8	37·1
3. East U.P.	9·5	11·7	15·4
4. Bihar	8·4	11·0	13·4
5. West Bengal	0·5	0·7	1·9
6. Assam	..	..	0·8
7. Orissa	0·2	1·4*	1·9*
8. Madhya Pradesh	1·6	1·7	2·1
9. Rajasthan	0·6	0·7	1·1
10. Gujarat	..	0·9	3·1
11. Maharashtra	7·2	18·8	34·6
12. Mysore	2·4	5·2	9·5
13. Andhra Pradesh	5·1	10·5	22·5
14. Madras	3·1	5·9	16·2
15. Pondicherry	..	..	1·3
16. Kerala	0·6	0·7	0·8
ALL INDIA	55·9	103·9	168·9

(*Includes Chagallu factory of Andhra Pradesh).

From the above table, it will be seen that there has been an additional gross investment in fixed assets of Rs. 113 crores in the eight year period 1953-54 to 1961-62. Of this, Rs. 48 crores have been in the first four years and Rs. 65 crores in the following four years. The break up of this growth of gross assets in the two four-yearly periods together with the expansion achieved in existing units and by installation of new units as well as the total increase in capacity are shown in the following table:

State/Region	Gross investment in fixed assets (crore Rs.)			Increase in capacity in the entire 8 years period (tonnes)		
	Four years ending 1957-58	Four years ending 1961-62	Total in 8 years	Expansion in the existing capacity	New capacity (New fys.)	Total
1. Punjab . .	4·8	1·3	6·1	2,268	4,318	6,604
2. West U.P. . .	13·2	8·3	21·5	12,547	2,235	14,782
3. East U.P. .	2·2	3·7	5·9	2,246	..	2,246
4. Bihar . .	2·6	2·4	5·0	1,067	..	1,067
5. Maharashtra .	11·6	15·8	27·4	3,226	14,531	17,757
6. Mysore . .	2·8	4·3	7·1	1,199	3,912	5,111
7. Andhra Pradesh	5·4	12·0	17·4	1,524	4,369	5,893
8. Madras . .	2·8	10·3	13·1	203	4,775	4,978
9. Other States .	2·6	6·9	9·5	965	5,486	6,451
ALL INDIA .	48·0	65·0	113·0	25,263	39,626	64,889

It will be observed that the maximum increase in capacity has taken place in Maharashtra and West U.P.; in the former the increase has mainly been due to the establishment of new factories and in the latter due to expansion in the existing units. The increase in capacity in Punjab, Mysore, Andhra Pradesh and Madras has largely been due to the establishment of new factories.

In East U.P. and Bihar marginal increase has taken place on account of expansion in the existing units. Here, the increase in investment is comparatively high showing that a large portion of the investment was used for rehabilitation and replacement of existing worn out equipment.

4.1.3 *Availability of resources*

The surplus of net worth over net fixed assets gives an idea of the internal resources that are available and could be used for rehabilitation, modernisation and expansion. The following table shows the distribution of factories according to surplus of net worth over net fixed assets as compiled from the Balance Sheets for the year 1961-62.

State/Region	Deficit		Surplus of net worth in lacs of Rupees		Total
	Coopera-tives	Others	0·0 to 20·0	20·0 & above	
1. Punjab	3	2	..	1	6
2. West U.P.	3	9	12	10	34
3. East U.P.	..	7	21	5	33
4. Bihar	..	10	12	4	26
5. West Bengal . . .	..	1	..	1	2
6. Assam	1	..	..	..	1
7. Orissa	..	1	..	..	1
8. Madhya Pradesh . .	..	1	2	2	5
9. Rajasthan	..	1	1	..	2
10. Gujarat	3	..	..	..	3
11. Maharashtra . . .	14	3	1	8	26
12. Mysore	3	1	2	2	8
13. Andhra Pradesh . . .	6	6	2	1	15
14. Madras	3	4	..	2	9
15. Pondicherry	..	1	..	..	1
16. Kerala	..	..	1	..	1
ALL INDIA . .	36	47	54	36	173

It will be seen that as many as 83 factories out of 173 or 48 per cent of the total have no internal resources at their disposal; on the contrary, they have partly financed their requirements through external assistance. This includes 36 co-operatives which have obtained loans from industrial Finance Corporation and State Governments.

4.1.4. *Profitability*

The average net profitability per factory per year in various States and the distribution of factories in the various profit slabs is given in the table below :

Average profit after tax or loss per year of sugar factories for the ten years ending 1961-62

State/Region	Average profit per year per factory (lacs of Rs.)	Distribution of factories in various profit slabs			
		No. of factories incurring loss	No. of factories making profit in each slab		Total
			0·00 to 3·00	3·00 and above	
1. Punjab	0·73	2	2	2	6
2. West U.P. . .	4·51	3	9	20	32
3. East U.P. . . .	0·71	7	24	2	33
4. Bihar	1·33	7	10	8	25
5. West Bengal . . .	5·41	1	..	1	2
6. Assam	(—)7·46	1	..	..	1
7. Orissa	3·03	..	..	1	1
8. Madhya Pradesh . .	1·86	1	3	1	5
9. Rajasthan	1·36	..	2	..	2
10. Gujarat	1·72	1	..	1	2
11. Maharashtra . . .	6·57	8	7	10	25
12. Mysore	3·68	2	1	4	7
13. Andhra	7·64	1	3	5	9
14. Madras	9·26	..	3	3	6
15. Pondicherry . . .	1·82	..	1	..	1
16. Kerala	3·56	..	..	1	1
ALL INDIA . .	3·23	34	65	59	158

It will be seen that except in Assam where there is only one factory which has recently started and which is incurring losses, the lowest profitability is in East U.P. followed by Punjab and Bihar. The profitability is high in Madras followed by Andhra Pradesh and Maharashtra. It will also be seen that out of a total of 158 factories studied, only 59 units have shown a profit of Rs. 3.0 lacs or above. There are as many as 34 factories which recorded losses. Of the factories recording loss or showing meagre profits, the largest number is concentrated in East U.P. and Bihar.

A study made by the Reserve Bank of India on profits in relation to size of the Companies in the sugar industry for 1955-59 published in the

Reserve Bank of India Bulletin of July 1961 is interesting. The study covers 73 public limited companies, which then accounted for about 79 per cent of all the public limited sugar companies. Gross profits as percentage of net assets as worked in that paper are shown below :—

Total net assets (lacs of Rs.)**	No. of companies	Gross Profits (lacs of Rs.)*					
		1955	1956	1957	1958	1959	Average
0—50 . .	8	4·2	6·5	6·4	7·4	8·9	7·0
50–100 . .	27	6·6	6·7	7·2	6·9	9·4	7·4
100–150 .	13	7·1	8·4	7·6	7·9	9·7	8·2
150–200 . .	11	8·2	9·8	10·3	9·8	10·7	9·8
200–300 . .	11	11·2	10·9	11·3	10·6	9·5	10·6
Over 300 . .	3	9·3	12·0	12·4	13·3	14·7	12·5
TOTAL . .	73	8·5	9·3	9·4	9·2	10·2	9·4

*Gross profits include Managing Agents' commission, interest charges and provision for taxes but excludes depreciation.

**Net assets comprise net fixed assets and circulating capital.

This study shows that the profitability of companies increases with the size of assets which in a large majority of cases has a direct bearing on capacity.

According to another study by the Reserve Bank, published in the Reserve Bank of India Bulletin of June, 1963, the average return on capital employed in sugar industry decreased from 10.2 per cent in 1959 to 8.8 per cent in 1960 and 7.4 per cent in 1961.

The overall position of the internal resources of the sugar industry in Punjab, U.P. and Bihar appears to be strained. Their capacity for finding external resources is also limited, as the equipment being out-dated and old, has not much sale value and the profitability is also poor. Financing institutions might find it difficult to advance loans to them. The factories would also hesitate to involve themselves in heavy borrowings in the absence of any incentive-based price for sugar. Under the circumstances, these units have been undertaking piece-meal expansions or modifications with uncertain results.

4.1.5 *Other factors contributing to uneconomic working*

A section of the industry, comprising particularly the uneconomic units has further represented that besides the various factors contributing to high cost of production, their economy has also been adversely affected, to some extent at least, by the following regulatory measures :

(i) The Wage Board Award
(ii) Linking of sugarcane price with recovery
(iii) Export loss.

The Wage Board Award :

The industry has represented that it carries a heavy labour load due to plants being old and the workers having been recruited at a time when labour costs were comparatively lower in the region. With the enforcement of the Wage Board Award, the wages were raised and the incidence of labour cost had therefore considerably increased. As a result of this the old factories are at a disadvantage as compared to the newer factories, where the labour force initially recruited is consierably less. The Committee hopes that the cost schedule that will hereafter be worked out by the Sen Commission, would naturally consider the effect of the Wage Board Award in all its aspects in the various regions.

Linking of sugarcane price with recovery :

To compensate for the higher wage bill and higher cost of production and lower capacity, the industry in some of these uneconomic regions particularly in East U.P. and North Bihar had a better recovery as a compensating factor. With the introduction of payment for cane on recovery basis about 65 per cent of this advantage has been passed on to the grower and the cost of production and profitability of the factories in these regions have been adversely affected. This disadvantage would get removed if a separate cost schedule is worked out for these regions.

Export loss :

The industry has represented that in so far as the subsidy that was given by the Government to meet the export loss of the industry was on the basis of no-profit no-loss, the units making loss should be compensated and not those who are making profit, while those who are making profit contend that the losses in their normal profit constitutes loss and the sacrifice involved is the same if payment is made on *pro rata* basis. The Committee understands that both the sections of the industry have agreed to arbitration by Shri V. Shankar.

Discussions of the various points considered in para 4.1 above will show that the poor profitability, uncertainty and lack of resources as against the large amount of finance required for proper rehabilitation and modernisation have been responsible for the present stalemate towards the proper development of the sugar industry.

4.2 *Measures for augmenting resources*

In so far as the rehabilitation programme is dependent on the availability of finance and profitability, the Committee's approach towards augmenting the resources of the uneconomic units is :

(i) to introduce certain regulatory measures to enable the high cost units to withstand competition with low cost units, and

(ii) creation of loan facilities so as to assist the industry to tide over its present difficulties.

4.2.1 *Regulatory measures*

(a) *Protection of high cost units during free economy* :

The industry particularly in East U.P. and North Bihar has represented that in view of the high cost of production due to factors beyond their control, during the existence of free economy, there should be a consideration in the tax structure on the principle of taxation based on 'capacity to pay', at least till such time as they are able to stand on their own. The two proposals of the industry are :

(i) Purchase tax on the basis of duration of season

(ii) Excise duty on a slab basis, with a graduated increase of incidence with higher slabs of sugar production.

The Committee has been given to understand that such considerations have been shown in some industries in similar circumstances. As there is the need for stabilising and strengthening the sugar industry in the interest of the regional economy, the Committee recommends these proposals for close consideration by Government. The Committee is not in favour, however, of giving any permanent or long duration props, to the high cost units of the industry. While every facility and opportunity should be given for the high cost units to improve their economy, a time limit should be set and the concessions gradually withdrawn in the interest of speedy results.

(b) *Controlled economy during the period of rehabilitation*:

In free economy the uneconomic and high cost units will find it difficult to survive competition. The scope for readjustments in the cost of production is limited because of the statutory obligations in respect of the price of raw material (sugarcane), labour wages and taxes. The only sphere where adjustment is possible is in respect of conversion cost. Even in this, there is not much scope. On the other hand, in other countries the inherent economic competing strength and investment capacity are the sole criteria for survival. Uneconomic units give place to more efficient and resourceful enterprises. But in India at present the survival of the small capacity uneconomic units is unavoidable in the interest of promoting regional economy. The necessity therefore arises of safeguarding the interests of these smaller units because so long as they do not have the complete freedom to adjust themselves in all respects they cannot face economic competition from the stronger units. Under the circumstances the Committee is of the opinion that controlled economy should continue till the high cost units expand and become economic. Should it however be considered necessary to decontrol sugar, adequate protection to high cost units would be necessary.

(c) *Regional cost structure* :

For the same reasons, under a controlled economy a price support in the form of a separate regional price becomes necessary. The Tariff Commission which examined the cost structure of sugar and recommended the fair price payable to the industry, divided the country into four regions *viz.*

1. Northern region comprising Punjab, U.P. and Bihar, Orissa, West Bengal and Assam.
2. Bombay State.
3. Madhya Pradesh and Rajasthan.
4. Southern region comprising Andhra, Madras, Mysore and Kerala.

The industry represented that the disparities in conditions of recovery, duration and capacity being widely varying in different parts of the northern region, the price of sugar should be fixed on a sub-regional basis. This principle has now been accepted by the Government.

(d) *Revision of cost schedules* :

The industry has also represented that the Tariff Commission schedules are out-dated as already more than five years have since passed and the factors affecting the cost structure of sugar have undergone significant changes. The Committee feels satisfied that the Sen Commission has been appointed by the Government to go into the cost structure of sugar.

(e) *Provision for adequate depreciation allowance*:

The Committee feels that a rational approach towards augmenting resources would be to ensure a satisfactory sugar price. Besides the regional cost structure and its revision in light of present day conditions, the existing provision in the sugar price in respect of depreciation, needs modification.

The industry has represented that the depreciation provision in the cost structure should be related to present day replacement cost of new equipment. It has stated that this has become all the more important as the machinery prices have increased four to five times over the pre-war cost and the prices are still rising. The Tariff Commission on Sugar (1959) provided for depreciation in the cost structure, calculated according to income tax rules, the block being considered on the basis of weighted averages of the written down values of plant and machinery in each region. The Commission further made the following observation :—

"As regards depreciation, the amount arrived at by us is generally higher than that allowed in the amended Naidu Schedule. The increase is due to the fact that our figure takes into account additional capital cost incurred by several factories during the intervening years. In the usual course, the incidence of depreciation will be expected to decrease in the years to come if it is assumed that no further additions to plant and machinery will take place. We do not however, envisage that capital investment will remain static in future in an expanding industry like sugar. At the same time we have no data regarding the extent of expansion or rehabilitation that will take place and cannot therefore provide for specific estimated increases. In the circumstances we have taken the view that the needs of the case will be met if the present figure of depreciation is maintained for the next three years or so, or until a fresh investigation is undertaken."

The Committee has examined the impact of the present procedure of depreciation allowance in the cost structure on the envisaged programme of rehabilitation and modernisation involving large investments which may go to increase the block of the region.

There has been an increase in the gross block by 65 crores during the four years ending 1961-62 after the examination by the Tariff Commission. Whether and to what extent the depreciation on this increased block has been taken care of by the depreciation provision made for the different regions in the prices has not been possible for the Committee to know. Further the fresh investigation envisaged by the Tariff Commission has not yet taken place and is now under reference to the Sen Commission.

In the context of the very large differences in the age (from one to sixty years), type and design of machinery, sources of supply of machinery, original costs of productive assets obtaining in the different units as well as the very large number of units and therefore the highly varying investment in the different units of the regions, the Committee has found that the present system of providing for depreciation on an average basis is working as a disincentive to investment. The existing units would continue to get depreciation on a depreciated block while new investment would be deprived of its due depreciation. This would be particularly so in regions of high concentration of uneconomic units where the written down value would be very low. A unit in such a region which undertakes heavy investment finds that the depreciation legitimately due to it is not forthcoming in the price. Even if it were possible to make an annual re-assessment of block, the block of the particular unit gets averaged with other units in the region and such units as have not undertaken investment would stand to gain at the cost of the units which have gone ahead with the programme of rehabilitation and modernisation. This is all the more discouraging as the economic position and profitability are poor. If on the other hand an uneconomic unit is located in a concentration of units having a much higher block, the low block unit has all the advantages of an appreciated block due to averaging.

In so far as certain regions like East U.P. and North Bihar have an average low block and at the same time low profitability, this absence of depreciation return on invested capital acts as a deterrent to further investments. The total needs for rehabilitation and modernisation have been assessed as Rs. 90 crores, spread over a period of about 10–12 years. The annual investment would therefore be of the order of about Rs. 10 crores. A large portion of this investment would be in the uneconomic regions of East U.P. and North Bihar. At the end of this annual investment each year a depreciation amount on Rs. 10 crores of appreciated block would become due to this industry. This would go on increasing corresponding to a total of Rs. 90 crores at the end of 10 years, with reduction corresponding to the depreciation in block that would have accrued in the interval. It is necessary therefore, to provide for this increase in the cost. In order to provide incentives for investment towards rehabilitation, it is necessary to evolve a procedure by which the provision for depreciation on invested capital is made available to the investing units only.

The concept of standard block

One of the ways to provide the incentive to uneconomic units for undertaking large scale investment towards rehabilitation and modernisation and also to solve, from the long range point of view, the recurring problem of gaps between the depreciation provision and replacement costs, would be to adopt the concept of standard block. By this concept, the depreciation would be based on an accepted cost of a new modern unit. The cost of production would be adjusted to match the efficiency of the new unit. The future increases in the cost of the equipment would be taken care of by linking to an appropriate index.

The current thinking of the Iron and Steel Board in U.K. on the subject of depreciation and return is contained in the following extract quoted by the Tariff Commission on the fixation of steel prices (1962).

"In the Board's first comprehensive price review in 1954, maximum prices were based on (a) the average cost of production of each product of the more efficient producers plus (b) a margin for depreciation and obsolescence of plant at replacement cost plus (c) a margin for profit based on the historical capital employed. But the Board realised that such a price policy might not, on the one hand, reflect quickly enough the possible reduction of costs resulting from new technical developments nor, on the other, offer enough incentive to expansion by providing a reasonable return on new plant at a time of rising costs. After the 1954 review, therefore, the

Board began to move towards a price policy geared less to average costs of production and to capital employed at existing works and more to production costs and to capital charges at a completely new plant. In this new approach the Board was influenced by the need for a massive expansion programme to meet rising demand. But average costs and historical capital were also losing their validity (underlined by the Committee) as a basis for current prices because of the changes that were taking place both in technology and in the value of money. Prices must be sufficient, the Board felt, to make the expansion of iron and steel making capacity justifiable; but they must also be low enough to discourage the continued use of obsolete plant and encourage modernisation. The new principle called for a new body of information and fresh estimates. The method that has been evolved is this. Something like an ideal plant is created on paper; its capital and operating costs are estimated and technical experts from the industry are asked to criticise. If the experts can show that the Board's assessments are unduly stringent they are modified. Otherwise the layout and size of the plant and the assessment of capital and operating costs, are assumed to be the most economically obtainable in favourable conditions. The Board then fixes prices to cover the operating costs, and reasonably remunerates the capital cost of the hypothetical plant. The technical estimates involved must necessarily leave some room for difference of opinion. Nevertheless, it is probable that a more exact knowledge than ever before has been gained in the field of cost economy. This has had the important result that apart from their function in price fixing the estimates of new plant costs are increasingly used by producers themselves as a yard stick in their development projects."

The Tariff Commission which enquired into fixation of prices for steel industry adopted the concept of standard block as this gives tacit advantages in cost fixation for an old unit since in effect the depreciation element gets linked with the latest replacement cost of assets. The Commission also refers to the Government's suggestion that for the purpose of determining depreciation and return, standard costs based on standard block should be adopted. The rate of depreciation should be linked to the life of assets based on sound engineering considerations. The Commission also adopted the straight line method of depreciation instead of diminishing balance method as the burden on prices by this procedure would be uniform.

The present rates approved for income tax purposes which have been in force since 1939 have a certain bias in that they enable the industry to recover proportionately higher quantum of depreciation over the value of assets during the first years of life. Apart from the value of this provision as an incentive to the industry in certain circumstances, the industry has the benefit of a tax holiday or a carry over of arrears of depreciation. Application of the above rates to high capital cost new units in the sugar industry would mean an increased burden on prices in the initial years. The effect would however get reduced if the cost of new units and low capital cost old units are averaged out for costing purposes.

The Committee examined the feasibility of applying the concept of the standard block to the sugar industry. The position would be as follows :—

(i) The average block in 1961-62 for 100 tonnes of installed capacity was about Rs. 56 lacs as against the block of Rs. 1.5 crores for 1000 tonnes capacity of a new modern unit. There is considerable variation in regional blocks as well as between units in the same region.

(ii) There will necessarily be some time lag in implementing the modernisation and rehabilitation programmes of the factories due to various reasons such as arranging of the necessary finances, placement of orders for machinery, supply of machinery by the manufacturers, etc. Allowing a higher depreciation on the standard block in advance of the completion of the rehabilitation programme would be an unjustifiable advantage to the factories at the cost of the consumer.

(iii) Investment to be made on rehabilitation and modernisation in uneconomic factories to reach the level of a new factory of a capital cost equal to the standard block would vary from factory to factory depending on the existing equipment, its condition, design, present layout etc. Provision for depreciation on the basis of standard block would, therefore, give to the factories unwarranted advantages and to varying extents.

(iv) The uneconomic units might become complacent and might not take steps to modernise and rehabilitate themselves, after they are assured of the advantage of depreciation on the basis of standard block. This advantage, in the interest of the consumer, should accrue to only such factories as actually participate in the rehabilitation programme and to the extent of their participation.

(v) There might be objection to the acceptance of depreciation on the basis of standard block for purposes of income tax determination. If, however, this is agreed to, it will be necessary that this advantage is not retained by the factories but utilized only for the purpose for which it is intended, namely rehabilitation and modernisation. It might present administrative difficulty to recover this extra depreciation from the factories concerned.

The matter has been carefully considered by the Committee in all its aspects. The Committee is of the view that it would be difficult to apply the standard block concept, as it is, to the sugar industry. Nevertheless, it would be desirable to provide some mechanism to induce the factories to invest on rehabilitation and modernisation in the ultimate interest of the economy of the factories, of the region and of the nation as a whole. A feasible approach, which the Committee recommends for the consideration of Government, would be that a levy at a certain rate may be imposed uniformly all over the country on the sugar consumed in the internal market and collected along with the excise duty as "Sugar Industry Development Fund". This Fund might be utilised for reimbursement to the factories towards depreciation on their actual additional investments for rehabilitation and modernisation at a rate to be prescribed by the Government of India. In order to ensure, that the factories do not retain this amount with themselves, provision should be made whereby the amount is paid directly by Government to the Financing Agency, on behalf of the factory, as an additional payment towards liquidation of the loans.

4.2.2 *Creation of loan facilities*

(a) *Funds needed for expansion and modernisation of factory plants and the foreign exchange requirement* :

According to the assessment of the Committee discussed earlier, the total needs for providing the equipment for rehabilitation and modernisation and recommended expansion of the uneconomic units would be of the order of Rs. 72 crores. To this will have to be added another 25 per cent towards changes in steam lines, modifications to buildings, shifting and re-arrangement of machinery, breaking of foundations and for rise in the cost of machinery etc. Thus about Rs. 90 crores would be involved in the rehabilitation, modernisation and expansion of the uneconomic units in the country.

The foreign exchange component in the total equipment cost would be of the order of Rs. 15 crores.

(b) *Revolving fund* :

Taking into consideration the limitation imposed by the availability of the equipment in the country and the foreign exchange resources, this requirement will have to be spread over a period of 8-10 years. On an average it may be possible to manage with about Rs. 10 crores annually. It is felt that a revolving fund of about Rs. 20 crores to begin with may meet the requirements. The Committee hopes that the Central Government would create this Fund out of existing revenues.

Loans may be advanced to sugar factories out of this Fund. The Committee suggests that the grant of loans should be subject to the following conditions :—

(i) Loans should be given to such factories as are prepared to contribute 1/3rd of the total requirements of rehabilitation and modernisation from their own resources, the balance 2/3rd may be given from the revolving fund and that too against supply invoices of the machinery ordered.

(ii) The factory concerned should provide such adequate security as may be specified by the Financing Agency.

(iii) Interest should be one per cent above the Reserve Bank rate but no interest should be charged for the first three years.

(iv) Loans should be paid back in 12 equal annual instalments, the first instalment commencing from the 4th year.

(c) *Deferred payment facilities* :

All the sugar machinery manufacturers are not in a position to offer deferred payment terms to factories as they are not offered corresponding credit facilities from banks. Under the extremely tight money conditions prevailing and the absence of resources with the uneconomic sugar factories, the rehabilitation, modernisation and expansion programme can be greatly speeded up if adequate credit facilities to indigenous manufacturers of sugar machinery are provided so that they can offer deferred terms to sugar factories.

The Committee understands that a scheme with the above objective formulated by the Industrial Development Bank of India (I.D.B.I.) is coming into effect shortly. Under the scheme bills have to be drawn by the industrial concerns purchasing the machinery in favour of the machinery manufacturers and the latter can then discount them with any of the 59 commercial banks of the Industrial Credit and Investment Corporation of India or the Madras Investment Corporation Ltd., who have been approved for the purpose by Industrial Development Bank of India.

(d) *Incentive for scrapping old units* :

A study of this report will show that there are a number of uneconomic factories which deserve to be scrapped altogether and in their place new units established. The industry however represented that those units still had some value which would disappear if the units were scrapped. This would add to their uneconomic condition. On the other hand their present resources did not permit them to undertake such large commitments as the putting up of new units would involve.

From the national point of view, the existence of these uneconomic units would be a lasting sore and even after heavy expenditure on their modernisation and expansion they would continue to present problems.

The industry has suggested that in order to enable it to scrap the old units and put up new ones at a heavy investment some special incentive should be given besides the normal financial assistance that might be given for purposes of rehabilitation and modernisation. These incentives as suggested are :—

(i) Increase in Development Rebate from the level of 20 per cent to 40 per cent as allowed in the case of shipping and coal industries;

(ii) Exemption of Purchase Tax for a period of three years;

(iii) Tax holiday for a stipulated period over a stipulated income.

As the Committee appreciates the need for a special incentive to encourage setting up of new units in place of old ones, individually or after merging as this would be in national interest, it recommends that the Development Rebate should be allowed to the extent of 40 per cent, in place of the usual 20 per cent to those units who put up new complete units of bigger capacities after scrapping their old units.

(e) *Safeguards* :

The various measures recommended by the Committee involve considerable effort and finance. The possibilities of both not bringing the desired results have to be safeguarded against. Considerable technical skill and experience of the highest order will be required to ensure successful rehabilitation, modernisation and expansion. The difficulties and risks involved in rehabilitation, modernisation and expansion of uneconomic units have already been discussed in the report. The Committee has found that the desired knowledge and experience of the complications involved in modernising old units might not be available with the factories. It is necessary to have proper and complete blue prints drawn up by the factories and to have them checked by experts.

Perhaps to a greater extent will it be necessary to ensure that the efforts and finance in sugarcane development are not frittered away in unproductive channels. The extension work will have to be guided by a body of experienced field scientists. A spirit of competition will have to be brought in, based on rewards, as this is the only effective way of ensuring results in a vastly spread area of effort where personal supervision is not at all possible. The concerned interests *viz.*, the factory and the grower, will have to be brought into picture and infused to co-operate with a feeling of joint endeavour.

The Committee has recommended liberal financial assistance involving large amounts by way of loans to the uneconomic units, several of whom may not be in a position to provide the necessary security. Under such circumstances apart from hypothecating the free assets and the newly created assets from the loan, it will be necessary to arrange for proper watch on expenditure by the Financing Agency. No expenditure should be undertaken by the factory without the concurrence of the Agency which will also keep a watch on the working of the factories concerned till the loans are paid back.

(f) *Executive machinery* :

Next to finance is the requirement of a talented and dynamic executive machinery. The growing of cane and development of communications are the responsibilities of the States while the control over production and supply of sugar is with the Centre. At the State level the various requirements of cane development are being looked after by several departments *e.g.*, Irrigation, Agriculture, Industries, Public Works etc. It is only the simultaneous and synchronised efforts in proportion to the needs, in a co-ordinated manner, that can bring results. To ensure this the Committee recommends the strengthening of existing staff and the constitution of high level co-ordinating authorities at the State level.

5. Future Planning of the Industry

5.1 Lessons from the Past

Though the Indian sugar industry has got a creditable record of developing in the shortest time and meeting the requirements of sugar within the country, the course of its development has neither been smooth nor satisfactory in many respects. There have been wide fluctuations in production, availability and costs. While this has created numerous problems to the Government and industry, it has also frequently left the growers and consumers dissatisfied. In several of the units, the profitability has been poor and the major portion of sugar is being produced in such units as are inefficient and costly in performance. The productivity in the field as well as in the factory has been falling due to inadequate resources. It is under these circumstances that the need has been felt for evolving principles of long range planning.

In the future planning of sugar production in the country, therefore, it is necessary to safeguard against those pitfalls, which have resulted in the present unsatisfactory position of the industry. During the course of its study, the Committee has found the following basic shortcomings :—

(i) Crowding of factories close to each other allowing no room for expansion, as in East U.P., North Bihar, West U.P. and Maharashtra and in a few cases in Madras.

(ii) Wrong location of units in regions unsuitable for sugarcane due to temporary incentives as in some of the erstwhile Indian States.

(iii) Installation of very small capacity units without provision for expansion or space for additional installation.

(iv) Lack of continuous attention to rehabilitation and modernisation with consequential fall in efficiency. To this category belong most of the uneconomic units in the country particularly those in East U.P. and North Bihar.

(v) Lack of development of compact blocks of cane near the factory and creation of vested interests at long distances.

(vi) Lack of attention to cane development thus allowing the very foundation to become weak. This is generally the case in Punjab, East U.P., Bihar and Madhya Pradesh.

5.2 Approach to future planning

In the overall strategy of future planning, the first obvious step is to see that the mistakes committed in the past are not repeated. Further steps should be

(i) to strengthen the uneconomic units of the industry so that the weak links in the chain of production are strengthened,

(ii) fluctuation in production are avoided by taking necessary steps already discussed earlier in the report,

(iii) cost of production is reduced by improving productivity both in the field and the factory as discussed earlier in this report.

5.2.1 *Location of new production capacity*

The most rational approach to the problem of location of any production unit must be on the basis of productivity, production cost and production potential. The Committee has found during its study that while appreciating the above aspects of productivity and production costs, there are certain associated aspects, which must also be considered, particularly in an essentially agro-based industry like sugar. In India due to historical reasons such as ready availability of cane in the sub-tropical northern region and lack of irrigational facilities in the tropical southern region, the early development of the sugar industry took place in the sub-tropical north and more than 80 per cent of the sugar production was confined to this region. Though climatically the northern region is not as suitable for sugarcane as the tropical south is, the present area under sugarcane and sugar production are as follows:—

Region	Area under cane (lac acres)	Per cent total area	Production of cane (million tonnes)	Per cent total cane produced	Sugar production (lac tonnes)	Per cent total sugar produced
1. Sub-tropical . .	43.85	80·15	67·65	66·58	14·61	56·89
2. Tropical . .	10·64	19·45	33·81	33·27	11·07	43·11
ALL INDIA . .	54·71*	100·00*	101·61*	100·00*	25·68	100·00

(*Includes non-sugar producing States and territories)

It will be seen from the above data that 80 per cent of the total cane area is in the northern region. With the development of irrigation facilities in the south and the increased needs of sugar in the country, there is now a shift in the production pattern towards the south. The number of growers and workers who depend on the sugar industry in the northern and the southern regions are given below:—

Region	No. of growers (in thousands)	No. of workers (in thousands)
Northern	2,270	125
Southern	160	53

It will be seen that the number of growers and workers which depends upon the sugar industry in the northern region is very large.

The value added by the sugar industry as compared to all industries in various parts of the country during 1960-61 as worked out in the Annual Survey of Industries, 1961, published by Industrial Statistics Wing of the Central Statistical Organisation, Calcutta is shown below:

State	Value added by all industries in the large scale sector (1960-61)		Value added by sugar industry (1960-61)	
	Total (Rs. lacs)	% to All India total	Total (Rs. lacs)	% to all India total
Punjab	2422·[illegible]	2·4	192·05	4·1
Uttar Pradesh	62[illegible]·04	6·3	1800·79	38·8
Bihar	[illegible]19·19	6·8	507·99	11·0
West Bengal	20341·72	20·6	115·59	2·5
Assam	2727·79	2·8		
Orissa	1206·32	1·2		
Rajasthan	1052·59	1.1		
Gujarat	10073·29	10·2		
Madhya Pradesh	2849·24	2·9	92·08	2.0
Maharashtra	26640·03	27·0	874·62	18·9
Mysore	3412·84	3·4	297·28	6·4
Andhra Pradesh	2765·04	2·8	395·99	8·5
Madras Pondicherry	8060·24	8·2	360·56	7·8
Kerala	2386·80	2·4		
Other States*	1871·61	1·9	..	..
All India	98790·90	100·0	4636·95	100.0

*All the non-sugar producing States and territories.

National income in 1960-61 has been estimated at Rs. 14160 crores at current prices. It will be observed from the above table that the contribution of the large-scale industries' sector is about Rs. 988 crores or 7 per cent of the national income. Out of the contributions, the sugar industry has contributed about Rs. 46 crores, *i.e.*, 4.7 per cent of the industries sector. Considering the various States, it will be observed that the sugar industry of U.P. has contributed 38.8 per cent, Maharashtra 18.9 per cent, Bihar 11.0 per cent and Andhra Pradesh 8.5 per cent of the total value added by the sugar industry. The contribution of the sugar industry in U.P., Bihar and Punjab still constitutes as much as 54.0 per cent of the total.

The problems relating to low standard of living, high population pressure and the large number of growers, workers and their families depending on sugarcane as the cash crop and the expanse and magnitude of the industry in the north are, therefore, factors, which in the view of the Committee cannot be set aside. It becomes, therefore, important to examine how far the industry, as it has developed in this region, can be improved and stabilised to the advantage of the large mass of population depending for its existence on the sugar industry. A factor that is also relevant is that given the necessary facilities, the productivity in the large areas of the northern region at the field level can be easily doubled by proper irrigation and other cane development measures suggested earlier in this report. The productivity at the factory level can be brought up to the level existing in other parts of the country by taking proper measures for rehabilitation, modernisation and expansion.

In addition to the above aspects of regional economy and dispersal of industry there would also be considerations of regional self-sufficiency.

5.2.2 *Potential*

In planning future production to meet the country's needs, it would be necessary also be gauge the regional potential *vis-a-vis* the total future requirements in the country. The Perspective Planning Division of the Planning Commission (notes on Perspective of Development: India: 1960-61 to 1975-76) places 35.7 lac tonnes as the target of production for the Third Plan, 50 lac tonnes for the Fourth Plan and 83 lac tonnes for the Fifth Plan. The actual production by the end of the Third Plan may fall slightly short of the target. The Fourth Plan target is now envisaged at 45 lac tonnes. In any case, even on a conservative estimate reducing the Fifth Plan target from 83 lac tonnes to 60 lac tonnes at the end of the Fifth Plan, the extra production during the Fourth and Fifth Plans to be achieved would be of the order of 25 lac tonnes, which is considerable. In spite of the development of the various irrigational resources, the total production in the southern region is about 10 lac tonnes. It is obviously incorrect to expect the southern region to be able to produce 25 lac tonnes more sugar during the next 10 years, the best that should be expected is 10 lac tonnes. The balance of 15 lac tonnes will have to be produced in the northern region. It appears a comparatively simpler task to produce this extra sugar in the existing vast sugarcane areas of the north by intensifying cane cultivation and expanding existing factories to absorb the extra cane production.

The above analysis by the Committee has shown that in spite of the desirable shift of future production to the more productive regions in the south, the country will have to depend for a long time to come for its major requirements of sugar on the northern region. The Committee has thus come to the inescapable conclusion that in the interest of sugar production, it is necessary to improve the productivity in the field and factories of the northern region also as recommended by the Committee earlier in this report.

5.2.3 *Siting of the new units*

One of the basic shortcomings of the early development of the industry has been in respect of its location. A number of units have been located too close to each other. Though to some extent this may have been justified by the availability of cane for the small capacities of units in the initial stages, with subsequent expansions there has developed a serious condition resulting in scramble for cane with unhealthy competition. In the future planning, it is very necessary to ensure that enough cane would be available up to 3000-4000 tonnes capacity for the existing units before a new factory is located in the vicinity. In any case there should be a distance of at least 15-20 miles between any two factories and there should not be any overlapping of areas and the sugarcane zones of each unit should be well defined. When starting a new unit every effort will have to be made from the very beginning to intensify cane development very near to the factory to ensure 100 per cent gate supplies. No license should be issued to any factory if the proposed area of operation has not got all the necessary facilities for intensive development of cane in a compact area near the proposed factory. In this connection the Committee noted with concern the representation made by several factories in Maharashtra and in other States that some of the co-operative factories had been located very close to the joint stock factories with the result that there was considerable scramble for cane. This had also resulted, in several cases, in uneconomic crush in both the factories. In such a situation it is obvious that the scope for expansion of the already licensed units to bigger and more economic capacities becomes highly restricted.

5.2.4 *Size of the new units*

In view of the concept of an economic size, under the present day conditions, 1500 tonnes should be the minimum starting capacity of a unit. Provisions will also have to be made both in the building space and surroundings to enable the factory to expand to 3,000 to 4,000 tonnes without any changes to the buildings subsequently.

5.2.5 *Several small units vs. a few big units*

There is a school of thought which considers the development of a large number of units of about 1,000 tonnes capacity as more appropriate for Indian conditions because such units would bring in a greater dispersal of prosperity to growers in a larger number of areas. It is argued further that with increase in capacity of a unit, the transport cost for cane increases. This Committee is of the view that the above arguments in favour of a large number of small units can only hold good if all the units in the region and in the country are confined to similar capacities and the scope for cost reduction for the consumer is to be limited. The size of the unit as a factor in reducing production cost is also important in the context of subsidies on exports. It is necessary to reduce the gap between the export price and the actual production cost, as we have to face competition with producers in foreign countries who have larger capacities of 4,000–5,000 tonnes and more.

As regards the extra cost incurred on the transport of cane in a big sized unit it is found that it should be possible to feed a 3,000 to 4,000 tonnes factory within a radius of 10-15 miles depending on the compactness of the cane area. With the development of road communications it should be possible to transport cane by road over a distance of 10-15 miles sufficiently economically.

The transport cost on cane will have to be judged in relation to other economic advantages which a bigger sized units has, such as central storage, mechanical handling, central and better control and supervision and above all economies in handling and transport of by-products such as molasses and bagasse and particularly of bagasse if it is to be sent to a paper factory. Large factories can manage to have by-product industries from out of their own by-products to a considerable extent. It should also be appreciated that the same number of growers will be served by the bigger units as by two or more smaller units. In view of the above, the Committee considers that where conditions permit, the approach in future planning should be for installing at least 1,500 to 2,000 tonnes factories capable of expansion to 3,000 to 4,000 tonnes.

5.2.6 *Additional space requirement*

The availability of space for expansion in the existing units in a large number of cases is very limited. Difficulties have been experienced not only in finding place for additional machinery for expansion but also for such essential requirements as storage of sugar and molasses, parking yards and staff and workers' colony, effluent disposal plants, let alone other amenities to workers like parks and play grounds, schools, hospital, club, etc. The problem is even more serious where the location of by-product industries adjoining the sugar factory is contemplated. The Committee is of the view that at least about 250 acres of land should be made available for locating the new units and blue prints for the present and future developments should be drawn up properly and got approved before a factory is licensed. Every facility should be given for the new or even existing units to acquire necessary land to this extent.

5.2.7 *Units for export*

It would be of great natural advantage to locate adequate number of large sized units for export of sugar near the coastal areas. This would, apart from lowering freight costs, reduce the load on the transport system of the country and enable speedy movements. It would also be necessary that wherever possible such regions are made surplus to the extent of export so that white sugar may not have to move there.

5.2.8 *Integrated sugar*-cum-*by-product industries*

The picture of production economics will very much change if by-product industries are made integral with sugar factories. Such integrated projects will result in the development of good modern townships in a rural area which few other agro-industries can bring about. The Committee would strongly recommend to Government to sponsor at least a few such integrated projects in different parts of the country along with new big units or merged big units.

5.2.9 *Simultaneous development of cane and communications along with development of new factory units*

It is considered essential that cane cultivation and communications are developed simultaneously with the development of new factory projects and not, as done hitherto, several years after the project has come into existence. The cane growers should be permanently attached to the factory and vested interests in the production of *gur* and *khandsari* should not be allowed to spring up in the factory zone.

5.2.10 *Expansion of existing units Vs. installation of new units*

Wherever cane potential exists, expansion of existing unit should be given priority over new units. This would not only mean lower initial investment for achieving the extra production, but would simultaneously render the existing production units more economic.

6. Summary of Conclusions and Recommendations

6.1 In the opinion of the Committee it is essential to clearly define and reserve the factory zones on a long term or permanent basis. Depending on the capacities of factories, area under sugarcane should be controlled to meet the optimum requirements of the factories.

The sugarcane growers should be educated to align their interests with those of the factory and the factory in turn should see to it that the interests of the growers are not allowed to suffer. As much direct contact should be established between the two as possible.

(*Paragraph* 1.3.1)

6.2 Production of sugarcane for *gur* manufacture should be planned separately. As far as possible no large scale manufacture of *gur* and *khandsari* should be permitted in factory areas. Licenses for new power crushers should not be given in factory areas and the existing licensees should be encouraged to shift to places outside the factory zones. An effective system of long term bonding of cane coupled with penalties, strictly enforced in case of breaches, would go a long way in preventing diversion and avoiding fluctuations in sugar production. During periods of control on white sugar, restrictions on the stocks and movement or *gur* and *khandsari* would also be a means of preventing diversion.

(*Paragraph* 1.3.2)

6.3 Fluctuations in yield and recovery can to a large extent be minimised by providing adequate irrigation and manuring and sowing the most suitable varieties for the tract, based on soil surveys and varietal trials. Provision of good, healthy seed would also go a long way in improving yield and recovery.

(*Paragraph* 1.3.3)

6.4 Flood control schemes, provision of liberal irrigation to withstand effects of drought or frost and introduction of drainage schemes, though costly are essential not only in the interest of sugarcane production but also for the benefit of general agriculture and should be taken up, implemented or augmented as soon as possible.

(*Paragraph* 1.3.4)

6.5 The Committee is of the view that plant protection measures being taken at present are not adequate and need to be strengthened considerably.

(*Paragraph* 1.3.5)

6.6 The Committee recommends that the factories should have adequate capacities to enable them to crush the available cane in a reasonable duration of season.

(*Paragraph* 1.4)

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6.7 The first approach to improve the productivity in U.P. and Bihar is to consolidate the holdings and bring the cane areas as close to the factories as possible by forming co-operatives of the growers or by other means. Efforts should be made to achieve the ideal that the factory operates in the centre of a compact and intensive cane area. The efforts of the two State Governments in the consolidation of holdings need to be expedited.

(*Paragraph* 2.1.2)

6.8 The Committee recommends the provision of small tractors and improved implements at reasonable charges from suitably located servicing centres wherever the size of holdings would permit their use. This service could be rendered by the Cane Growers' Co-operative Societies. Incentives should be given by the State Governments/sugar factories in the early stages to such servicing organisations through the grant of subsidies and/or loan facilities for the purchase of tractors and other implements and importation of spare parts. The subsidies would be necessary in the initial stages till the cultivators make full use of the available facilities.

(*Paragraph* 2.1.2)

6.9 The need for establishment of a large number of primary and secondary seed nurseries, scattered over the area of cane cultivation, to ensure that at least 20 per cent of the seed requirements flow from these nurseries to the cultivators every year, is very important. In this connection, the Committee recommends that every factory should be allowed to have a farm of 500–1,000 acres depending on its capacity, which should be utilised for purposes of seed propagation and supply and for demonstration.

(*Paragraph* 2.1.2)

6.10 Irrigation is required not only to make up the deficiency of rainfall but to meet the increased requirements of water by the soil for a good crop. The overall requirements of irrigation in the various sugar producing States should be met at the earliest. Considerable investment and speedy execution would be necessary for achieving a quick increase in productivity. The Committee is disappointed to find that in several areas existing irrigation facilities have not been fully and properly utilised even after considerable amounts of money have been spent on creating them. This has to do with the command areas, hours of working, availability of power, lack of maintenance and supervision etc. In some areas, the high rates of irrigation and indifference of growers towards irrigation have also been responsible for lack of fuller utilisation of the available irrigation facilities.

The Committee recommends that while the State Government should streamline the administrative machinery, the rates and subsidies, depending on localities, should be so fixed that the fullest use of the irrigation facilities is actually made. When once the advantages of irrigation are realised by the cultivator, he would continue to use the water in spite of the rates being normalised and the subsidies, if any, withdrawn.

(*Paragraph* 2.1.2)

6.11 In connection with the increase in the height of water table and the and the area under water logging, it is necessary to ensure that any new project of flow irrigation is preceded by well thought out and executed schemes of drainage.

(*Paragraph* 2.1.2)

6.12 Sugarcane is a soil exhausting crop and unless the nutrients are replenished, the productivity cannot be maintained and naturally it is necessary to synchronise the additions of fertilisers with the increased irrigation facilities.

Various States have set up suitable organisations for the supply of manures and fertilisers to cane growers. While the existing distribution and credit facilities are satisfactory in some of the States like Maharashtra, Andhra Pradesh and Madras, in some of the States like Bihar, Mysore, U.P. etc. these facilities have not been as satisfactory. The general complaint is lack of timely availability of manures and the required credit facilities. The Committee recommends that the State Governments will remove these difficulties of the cultivator in the matter of his fertilizer requirements. The timely application of manure is very important both for raising the yield as well as improving the quality.

(*Paragraph* 2.1.2)

6.13 The most important key to improve and maintain a high level of productivity in sugarcane production is a vigorous and dynamic breeding programme. The Committee notes with satisfaction, the proposal to establish two sub-stations of the Coimbatore Institute one at Motihari in Bihar and another at Lucknow in U.P., which will be concerned with building genetic-material for use in breeding.

The Committee is of the view that arrangements for breeding newer varieties on a much more enhanced scale is necessary if the fall in yields and recovery, particularly in some of the northern regions, has to be arrested. The weeding of unapproved varieties should also be enforced strictly and newer promising varieties introduced even on subsidised basis, in the initial stages, if necessary.

(*Paragraph* 2.1.2)

6.14 Plant protection measures to control the pests and diseases have to be intensified. Proper quarantine measures to isolate pockets of pests and disease infestation would be necessary to prevent their spreading. Well equipped plant protection squads should be stationed at suitable locations to be available at short notice. A continuous watch will have to be kept for timely identification of new pests and diseases so as to eradicate them in the earlier stages. Biological control of pests should be intensified.

(*Paragraph* 2.1.2)

6.15 In the absence of suitable credit facilities the cultivator is led to borrow against his crop at a heavy rate of interest and cannot also think of providing himself with such requisites as modern implements, sturdy bullocks or tractors, irrigation, manures, etc. It is necessary to augment the credit facilities to the cultivator by providing the necessary credit to the co-operative banks and institutions in the area. It will be necessary for the State Governments to provide the necessary security for such additional facilities. While providing these credit facilities to the grower, it should be ensured that they are given strictly for productive purposes as the cultivator in view of his lean resources is prone to fritter away such facilities into unproductive channels.

(*Paragraph* 2.1.2)

6.16 The State Governments, sugar factories and cane societies should create the necessary climate for the growers to take to improved methods in their agricultural practices.

A comprehensive research programme of soil surveys, fixing of manurial schedules, breeding of proper varieties, application of plant protection measures etc., will have to be drawn up and executed with speed. It would be better to carry out the intensive development programme in selected areas to bring out the maximum potential. The intensive development schemes where in operation are directed towards this end. While this is very desirable, there will have to be a still more intensive programme, if necessary, even over a smaller area in which the potential as also all the requisites to achieve the potential get established.

(*Paragraph* 2.1.2)

6.17 A pre-harvest survey of maturity of the standing cane crop with a view to fixing the harvesting programme is a great necessity.

(*Paragraph* 2.1.2)

6.18 If the quality of sugarcane has to be developed to the maximum extent that the climatic and soil conditions permit, payment for cane on the basis of quality is a must. The Committee recommends that a beginning should be made by introducing the scheme of payment on quality basis, at an early date, so as to make the growers quality conscious.

(*Paragraph* 2.1.2)

6.19 Transport by rail is responsible for some loss in recovery due to staling of cane. Rail transport also means double handling thereby increasing the cost of cane and loss due to pilferage.

Intensification of cane areas near the factories, elimination of rail centres and development of gate cane supplies to 100 per cent will save these losses.

(*Paragraph* 2.1.2)

6.20 In the context of supplying fresh cane at minimum cost to the factory, development of communications assumes great importance. The needs of communications in the factory areas of different States as detailed in the State reports should be met at the earliest.

It is suggested that the assistance of the factories should be taken where ever possible in the development of communications. Development of communications in sugarcane areas will not only help the transport of cane, but of other agricultural products as well.

(*Paragraph* 2.1.2)

6.21 The Committee has discussed that the objective should be to reach at the earliest a capacity of 1,500 tonnes per day and where possible higher. Taking this view, as many as 164 factories need to be expanded depending on the cane potential and the existing capacity.

The Committee endorses fully the following observation of the Productivity Team in this regard .—

> "Another striking factor which came to our notice and which has contributed greatly to the increased efficiency and productivity in the countries visited was the large size of the units of production. Because large sized units lead to decreasing cost of production and increased efficiency and productivity, the importance of raising the capacity of the existing factories in India and putting up only large sized units hereafter is obvious".

(*Paragraph* 2.2.2)

6.22 Apart from reducing the cost of manufacture of sugar by exercising the utmost fuel economy bagasse must be saved for the manufacture of paper for which cellulosic raw material is very scarce in the country.

(*Paragraph* 2.2.3)

6.23 Efficiency in production is also dependent on the man behind the machine. If the technical personnel engaged in the production understand the principles of processing and are aware of the latest techniques, much of the time and material loss can be avoided and higher efficiency achieved thus contributing to reduction in the cost of production. The Committee has observed that the situation obtaining at present in the industry is not entirely satisfactory.

There is considerable shortage of suitably qualified engineering personnel The Committee is of the view that since sugar factories are situated in rural areas and lack the amenities of a town, the conditions of service for the technical personnel offered by the sugar industry will have to be better than those offered by other industries in order to attract qualified people particularly the engineering graduates. Immediate attention of the industry in this direction is necessary.

A large number of Indian sugar factories are old and outdated and of small capacities having high manufacturing losses and poor efficiency, recording high fuel consumption and low productivity and lacking in suitably qualified personnel. If the cost of production has to be brought down further, the need for rehabilitation and modernisation, if possible replacement of old units with new ones of bigger capacity, expansion of existing capacities to economic size, improving labour productivity and making up the deficiency of technical personnel is inescapable.

(*Paragraph* 2.2.3)

6.24 The Committee is of the view that a capacity of 1,500 tonnes would be a fairly economic capacity under the conditions prevailing at present in India. While, therefore this 1,500 tonnes should be the minimum target for expanding the existing units, new units should have a starting capacity of 1,500 or 2,000 tonnes with provisions for expansion to 3,000–4,000 tonnes.

The Committee has from the beginning been convinced that the heavy costs involved in rehabilitation and modernisation of small units can only be justified by an appreciable expansion.

The Committee's approach to expansion of capacity in the context of rehabilitation and modernisation under conditions of limited financial resources has, however, been to phase it in such a way that the first phase of expansion is up to the maximum capacity permitted by the existing milling units with such modifications and additions as may be necessary keeping the cost involved to the minimum possible. Where however, the milling units are too small and too old to permit of any substantial expansion coupled with efficiency, a new milling unit will have to be added. Even in those cases where, in the first phase the expansion has been limited, the milling units will have to be changed into bigger sized ones in the second phase, to the extent the cane potential in the area will permit, the aim being to reach the economic capacity of 1,500 tonnes in the shortest possible time. Where funds are available and permit new bigger plants to be put up, that would be a much better proposition than incurring heavy expenditure on rehabilitation and modernisation of old units.

(*Paragraph* 2.2.4)

6.25 Where two or more small capacity old and out-dated units with high cost of production are located near together and adequate cane potential to meet expansion to economic sizes in each case does not exist, the Committee is of the view that such units should be merged and a new bigger plant equivalent to the combined capacity of the merged units should be installed. It would be preferable to have a new bigger factory rather than to rehabilitate and modernise two or more small uneconomic factories without any expansion.

(*Paragraph* 2.2.4)

6.26 The Development Council for Sugar Industry has observed that investment on rehabilitation and modernisation of the present small units without appreciable expansions simultaneously would not be worthwhile. This Committee agrees with the above view and accordingly recommends that expansions be allowed to the maximum capacity permissible by the existing milling units along with rehabilitation and modernisation.

(*Paragraph* 2.2.4)

6.27 Most of the old plants are steam driven with low pressure boilers. They started as small plants of about 400 tonnes capacity and in the process of expansion to the present level of 800–1,000 tonnes have installed new equipment in haphazard manner within the small space in which the original small plant was set up. Buildings will, therefore, have to be extended and modified in area as well as height. This would involve strengthening of the supporting structure and the foundations. It would be uneconomic and undesirable to add more units of small sizes to make up the capacity. It would be more economical to put up a few big plants.

(*Paragraph* 2.2.4)

6.28 With the concept of the present day economic size and the trends for further increases in the average capacity, atleast some provision will have to be made to take care of further demands on capacity consistent with maintenance of efficiency.

(*Paragraph* 2.2.4)

6.29 One of the essentials of modernisation of old uneconomic units, which are steam driven, is electrification. This would mean addition of turbo-alternators. For proper steam economy, the turbo-alternator will need high pressure boilers. The next step for efficient and economic working will be to put proper electric load on the generator. For this the various drives in the factory will have to be electrified and motors of various capacities will have to be purchased and with it the pumps, drives etc.

Many factories have low pressure boilers of 100-125 lbs./sq. inch steam pressure, as against the modern boilers of 300 lds./sq. in. and higher. The old boilers are inefficient. They do not have heat economy attachments like economisers and superheaters and the cost involved in adding these heat recovery units to the old boilers would be prohibitive; it will be economical to replace them by new modern units.

(*Paragraph* 2.2.4)

6.30 There will be considerable difficulty in synchronising the working of the new equipment and process in the transition stage and it will take some time before the workers get trained to work the new equipment. The Committee would thus sound a caution that uneconomic units wishing to rehabilitate should carefully assess as to whether the installation of a bigger completely new plant or the renewal, modernisation or expansion of the old plant would bring an assured return from the heavy investment involved.

(*Paragraph* 2.2.4)

6.31 If finance can be made available, it would be in the interest of the industry and the economy of the region to instal new plants of bigger capacities by merging present small sized closeby factories facing financial difficulties and hampering production.

The Committee would recommend that to begin with the following units, which belong to the same managements, should be allowed to merge and have single large sized units :—

1. Raza and Buland
2. Basti and Walterganj
3. Kathkuiyan and Padrauna
4. Deoria and Baitalpur
5. Sakri and Lohat
6. Munirabad and Hospet
7. Seethanagaram and Bobbili

(*Paragraph* 2.2.4)

6.32 In all, 48 factories have reported a surplus of 6,320 workers with them. The labour estimated by 64 factories to become surplus after modernisation is 10,196.

Some of this surplus labour would automatically get reduced by the process of natural wastage, old age pension, etc. It has already been estimated that the total finance involved in rehabilitation and modernisation will be of the order of Rs. 72 crores by way of equipment and another 18 crores for other incidental expenditure. When the factories are modernised and expanded in capacity, by-product industries are bound to develop and the Committee feels that most of this surplus labour would be absorbed.

(*Paragraph* 2.2.5)

6.33 After studying the scope for saving bagasse in the northern region and the serious shortage of cellulosic raw materials for the paper industry, the Committee recommends an integrated approach to start simultaneously the process of rehabilitation, modernisation and expansion or complete new units in place of a group of old mills in definite specified regions and to locate paper projects based on bagasse so that the saved bagasse from the modernised units can automatically flow into these paper plants. The Committee favours the starting of projects based on saved fuel in the first instance as the solution to the problems connected with an assured supply of the substitute fuel would be necessary, when dealing with a perishable raw material like sugarcane. Adequate incentives should also be given for bagasse based paper and other products for a speedy exploitation of this potential.

On the basis of saved bagasse there is scope for three paper factories of 100 tonnes per day capacity in West U.P., two factories in East U.P. and two factories in Bihar. The scope for bagasse based paper projects is however great in all the regions on the basis of satisfactory and dependable arrangements for substitute fuel for bagasse.

The Committee understands that a number of schemes for the manufacture of paper, board etc. involving the use of bagasse have been licensed. A license for a 30,000 tonnes per year newsprint project in Uttar Pradesh has also been granted. These schemes, however, are not making much headway. The Committee suggests that the causes for delay may be examined by the authorities at an early date.

(*Paragraph* 2.2.6)

6.34 With the production of raw sugar in the country another rational approach, perhaps a better approach, would be to use the raw sugar molasses for cattle feed purposes. There has been a suggestion to use raw sugar molasses as pig-feed in view of the possibilities of export of pigs to some South-East Asian countries. This suggestion merits attention.

(*Paragraph* 2.2.6)

6.35 Except in Bihar where there is scope for about three million gallons of alcohol production capacity, other States are surplus in the installed capacity for alcohol.

(*Paragraph* 2.2.6)

6.36 It is very necessary that adequate arrangements are made for molasses storage both at the sugar factories and the distilleries and the maximum quantity of molasses diverted for alcohol production. Where however, molasses cannot be lifted for purposes of alcohol production, many factories have represented that they should be allowed to sell the molasses at the market rate instead of having to sell at the controlled rate to parties who take advantage of the difference between the controlled rate and the prevailing market rate. This appears to be a reasonable demand as the extra income from the open market rates, particularly for the uneconomic units, would go to relieve the stress on their financial condition.

(*Paragraph* 2.2.6)

6.37 The question of augmenting the controlled price of molasses for reducing the cost of sugar has also been raised. The Committee is of the view that the margin of profit enjoyed by alcohol based industries should be examined and if there is a scope for them to pay a higher price for alcohol so that alcohol distilleries can pay a higher price for molasses, the price of molasses should be raised to the extent permissible. The controlled price of molasses was fixed a long time ago and it is time a fresh examination was made.

(*Paragraph* 2.2.6)

6.38 The Committee strongly recommends collaborative efforts between the Government and the industry for putting up a continuous wax recovery-*cum*-refining unit and working out schemes for the modification of wax to suit the different end uses. This potential for reducing the cost of production of sugar has to be exploited early. With the removal of wax, the manurial value of the mud also increases.

Proper use for the press-mud of carbonation factories has not been developed as yet. It is understood that this mud is being successfully used in Dalmianagar in cement manufacture. However, more intensive research work on the use of carbonation press-mud is recommended.

(*Paragraph* 2.2.6)

6.39 The finance required for adding or replacement of machinery for modernisation and expansion is of the order of Rs. 72.0 crores. To this must be added 25 per cent for erection, shifting, change of pipe lines etc., which brings the total to about Rs. 90 crores.

For irrigation the expenditure would be of the order of Rs. 80 crores but this would be mostly in the form of loan, which would be recoverable.

For communications the financial requirement is again of the order of Rs. 90.0 crores. This will be contributed one-third by the Centre, one-third by the State Governments and one-third by the beneficiaries.

Expenditure by way of loan on manures and fertilisers in U.P. only will be of the order of Rs. 3.7 crores and subsidy on cane seed for popularising new varieties will be Rs. 1.5 crores.

The above financial requirements would appear to be large, but all the same, the assessment of the situation by the Committee indicates that they are necessary and urgent and should be provided to improve the economy of the regions.

The sugar industry is not only the second largest industry of the country but is in the real sense an agro-based industry situated in rural areas. On its efficient performance depends the well being of entire regions and of millions of cultivators and a large number of workers. It would, therefore, be necessary to so shape this industry as to derive the maximum benefit from it in the country's economy. In the overall planning therefore it is important that this position of the sugar indusry is appreciated and adequate provisions are made on priority basis.

(*Paragraph* 3)

6.40 The Committee hopes that the cost schedule that will hereafter be worked out by the Sen Commission, would naturally consider the effect of the Wage Board Award in all its aspects in the various regions.

(*Paragraph* 4.1.5)

6.41 With the introduction of payment for cane on recovery basis about 65 per cent of the advantage of better recovery in East U.P. and North Bihar has been passed on to the grower and the cost of production and profitability of the factories in these regions have been adversely affected. This disadvantage would get removed if a separate cost schedule is worked out for these regions.

(*Paragraph* 4.1.5)

6.42 In so far as the rehabilitation programme is dependent on the availability of finance and profitability, the Committee's approach towards augmenting the resources of the uneconomic units is :—

(i) to introduce certain regulatory measures to enable the high cost units to withstand competition with low cost units, and

(ii) creation of loan facilities so as to assist the industry to tide over its present difficulties.

(*Paragraph* 4.2)

6.43 The industry particularly in East U.P. and North Bihar has represented that in view of the high cost of production due to factors beyond their control, during the existence of free economy, there should be a consideration in the tax structure on the principle of taxation based on 'capacity to pay'. The two proposals of the industry are :

(i) Purchase tax on the basis of duration of season

(ii) Excise duty on a slab basis, with a graduated increase of incidence with higher slabs of sugar production.

The Committee recommends these proposals for close consideration by Government. The Committee is not in favour however, of giving any permanent or long duration props to the high cost units of the industry.

(*Paragraph* 4.2.1)

6.44 The necessity therefore arises of safeguarding the interest of these smaller units because so long as they do not have the complete freedom to adjust themselves in all respects they cannot face economic competition from the stronger units. Under the circumstances the Committee is of the opinion that controlled economy should continue till the high cost units expand and become economic. Should it however be considered necessary to decontrol sugar, adequate protection to high cost units would be necessary.

(*Paragraph* 4.2.1)

6.45 The industry represented that the disparities in conditions of recovery, duration and capacity being widely varying in different parts of the northern region, the price of sugar should be fixed on a sub-regional basis. This principle has now been accepted by the Government.

The industry has also represented that the Tariff Commission schedules are out-dated as already more than five years have since passed and the factors affecting the cost structure of sugar have undergone significant changes. The Committee feels satisfied that the Sen Commission has been appointed by the Government to go into the cost structure of sugar.

(*Paragraph* 4.2.1)

6.46 The Committee feels that a rational approach towards augmenting resources would be to ensure a satisfactory sugar price. Besides the regional cost structure and its revision in light of present day conditions the existing provision in the sugar price in respect of depreciation, needs modification.

In the context of the very large differences in the age (from one to sixty years), type and design of machinery, sources of supply of machinery, original costs of productive assets obtaining in the different units as well as the very large number of units and therefore the highly varying investment in the different units of the regions, the Committee has found that the present system of providing for depreciation on an average basis is working as a disincentive to investment. A unit in such a region which undertakes heavy investment finds that the depreciation legitimately due to it is not forthcoming in the price. Even if it were possible to make an annual re-assessment of block, the block of the particular unit gets averaged with other units in the region and such units as have not undertaken investment would stand to gain at the cost of the units which have gone ahead with the programme of rehabilitation and modernisation.

In so far as certain regions like East U.P. and North Bihar have an average low block and at the same time low profitability, this absence of depreciation return on invested capital acts as a deterrent to further investments. In order to provide incentives for investment towards rehabilitation, it is necessary to evolve a procedure by which the provision for depreciation on invested capital is made available to the investing units only.

(*Paragraph* 4.2.1)

6.47 It would be desirable to provide some mechanism to induce the factories to invest on rehabilitation and modernisation in the ultimate interest of the economy of the factories, of the region and of the nation as a whole. A feasible approach, which the Committee recommends for the consideration of Government would be that a levy at a certain rate may be imposed uniformly all over the country, on the sugar consumed in the internal market, and collected along with the excise duty as "Sugar Industry Development Fund". This Fund might be utilised for reimbursement to the factories towards depreciation on their actual additional investments for rehabilitation and modernisation at a rate to be prescribed by the Government of India. In order to ensure that the factories do not retain this amount with themselves, provision should be made whereby the amount is paid directly by Government to the Financing Agency on behalf of the factory as an additional payment towards liquidation of the loans.

(*Paragraph* 4.2.1)

6.48 About Rs. 90 crores would be involved in the rehabilitation, modernisation and expansion of the uneconomic units in the country. The foreign exchange component in the total equipment cost would be of the order of Rs. 15 crores.

Taking into consideration the limitation imposed by the availability of the equipment in the country and the foreign exchange resources, this requirement will have to be spread over a period of 8–10 years. On an average it may be possible to manage with about Rs. 10 crores annually. It is felt that a revolving fund of about Rs. 20 crores, to begin with, may meet the requirements. The Committee hopes that the Central Government would create this Fund out of existing revenues.

Loans may be advanced to sugar factories out of this Fund. The Committee suggests that the grant of loans should be subject to the following conditions :—

(i) Loans should be given to such factories as are prepared to contribute 1/3rd of the total requirements of rehabilitation and modernisation from their own resources, the balance 2/3rd may be given from the revolving fund and that too against supply invoices of the machinery ordered.

(ii) The factory concerned should provide such adequate security as may be specified by the Financing Agency.

(iii) Interest should be one per cent above the Reserve Bank rate but no interest should be charged for the first three years.

(iv) Loans should be paid back in 12 equal annual instalments, the first instalment commencing from the 4th year.

(*Paragraph* 4.2.2)

6.49 All the sugar machinery manufacturers are not in a position to offer deferred payment terms to factories as they are not offered corresponding credit facilities from banks. Under the extremely tight money conditions prevailing and the absence of resources with the uneconomic sugar factories, the rehabilitation, modernisation and expansion programme can be greatly speeded up if adequate credit facilities to indigenous manufacturers of sugar machinery are provided so that they can offer deferred terms to sugar factories.

(*Paragraph* 4.2.2)

6.50 A study of this report will show that there are a number of uneconomic factories which deserve to be scrapped altogether and in their place new units established.

The industry has suggested that in order to enable it to scrap the old units and put up new ones at a heavy investment some special incentive should be given besides the normal financial assistance that might be given for purposes of rehabilitation and modernisation. These incentives as suggested are :

(i) Increase in Development Rebate from the level of 20 per cent to 40 per cent as allowed in the case of shipping and coal industries;

(ii) Exemption of Purchase Tax for a period of three years;

(iii) Tax holiday for a stipulated period over a stipulated income.

As the Committee appreciates the need for a special incentive to encourage setting up of new units in place of old ones, individually or after merging, as this would be in national interest, it recommends that the Development Rebate should be allowed to the extent of 40 per cent, in place of the usual 20 per cent to those units who put up new complete units of bigger capacities after scrapping their old units.

(*Paragraph* 4.2.2)

6.51 The Committee has found that the desired knowledge and experience of the complications involved in modernising old units might not be available with the factories. It is necessary to have proper and complete blue prints drawn up by the factories and to have them checked by experts.

Perhaps to a greater extent will it be necessary to ensure that the efforts and finance in sugarcane development are not frittered away in unproductive channels. The extension work will have to be guided by a body of experienced field scientists. A spirit of competition will have to be brought in, based on rewards, as this is the only effective way of ensuring results in a vastly spread area of effort where personal supervision is not at all possible. The concerned interest *viz.*, the factory and the grower, will have to be brought into picture and infused to co-operate with a feeling of joint endeavour.

The Committee has recommended liberal financial assistance involving large amounts by way of loans to the uneconomic units, several of whom may not be in a position to provide the necessary security. Under such circumstances apart from hypothecating the free assets and the newly created assets from the loan, it will be necessary to arrange for proper watch on expenditure by the Financing Agency. No expenditure should be undertaken by the factory without the concurrence of the Agency which will also keep a watch on the working of the factories concerned till the loans are paid back.

(*Paragraph* 4.2.2)

6.52 Next to finance is the requirement of a talented and dynamic executive machinery. To ensure this the Committee recommends the strengthening of existing staff and the constitution of high level co-ordinating authorities at the State level.

(*Paragraph* 4.2.2)

6.53 In the future planning to sugar production in the country, it is necessary to safeguard against those pitfalls, which have resulted in the present unsatisfactory position of the industry. During the course of its study, the Committee has found the following basic shortcomings :

(i) Crowding of factories close to each other allowing no room for expansion, as in East U.P., North Bihar, West U.P. and Maharashtra and in a few cases in Madras.

(ii) Wrong location of units in regions unsuitable for sugarcane due to temporary incentives as in some of the erstwhile Indian States.

(iii) Installation of very small capacity units without provision for expansion or space for additional installation.

(iv) Lack of continuous attention to rehabilitation and modernisation with consequential fall in efficiency. To this category belong most of the uneconomic units in the country, particularly those in East U.P. and North Bihar.

(v) Lack of development of compact blocks of cane near the factory and creation of vested interests at long distances.

(vi) Lack of attention to cane development thus allowing the very foundation to become weak. This is generally the case in Punjab, East U.P., Bihar and Madhya Pradesh.

(*Paragraph* 5.1)

6.54 In the overall strategy of future planning, the first obvious step is to see that the mistakes committed in the past are not repeated. Further steps would be :

(i) to strengthen the uneconomic units of the industry so that the weak links in the chain of production are strengthened

(ii) fluctuations in production are avoided by taking necessary steps recommended earlier

(iii) cost of production is reduced by improving productivity both in the field and the factory

(*Paragraph* 5.2)

6.55 The most rational approach to the problem of location of any production unit must be on the basis of productivity, production cost and production potential. The Committee has found during its study that while appreciating the above aspects of productivity and production costs, there are certain associated aspects, which must also be considered, particularly in an essentially agro-based industry like sugar.

The problems relating to low standards of living, high population pressure and the large number of growers, workers and their families depending on sugarcane as the cash crop and the expanse and magnitude of the industry in the north are factors, which in the view of the Committee cannot be set aside. It becomes, therefore, important to examine how far the industry, as it has developed in this region, can be improved and stabilised to the advantage of the large mass of population depending for its existence on the sugar industry.

In addition to the above aspects of regional economy and dispersal of industry there would also be considerations of regional self-sufficiency.

(*Paragraph* 5.2.1)

6.56 The above analysis by the Committee has shown that in spite of the desirable shift of future production to the more productive regions in the south, the country will have to depend for a long time to come for its major requirements of sugar on the northern region.

(*Paragraph* 5.2.2)

6.57 In the future planning, it is very necessary to ensure that enough cane would be available up to 3,000–4,000 tonnes capacity for the existing units before a new factory is located in the vicinity. In any case there should be a distance of at least 15–20 miles between any two factories and there should not be any over-lapping of areas and the sugarcane zones of each unit should be well defined. When starting a new unit every effort will have to be made from the very beginning to intensify cane development very near to the factory to ensure 100 per cent gate supplies. No license should be issued to any factory if the proposed area of operation has not got all the necessary facilities for intensive development of cane in a compact area near the proposed factory.

(*Paragraph* 5.2.3)

6.58 In view of the concept of an economic size under the present day conditions, 1,500 tonnes should be the minimum starting capacity of a unit. Provisions will also have to be made both in the building space and surroundings to enable the factory to expand to 3,000 to 4,000 tonnes without any changes to the buildings subsequently.

(*Paragraph* 5.2.4)

6.59 The Committee considers that where conditions permit the approach in future planning should be for installing at least 1,500 to 2,000 tonnes factories capable of expansion to 3,000 to 4,000 tonnes.

The size of the unit as a factor in reducing production cost is also important in the context of subsidies on exports. It is necessary to reduce the gap between the export price and the actual production cost as we have to face competition with producers in foreign countries who have larger capacities of 4,000–5,000 tonnes and more.

(*Paragraph* 5.2.5)

6.60 The Committee is of the view that at least about 250 acres of land should be made available for locating the new units and blue prints for the present and future developments should be drawn up properly and got approved before a factory is licensed. Every facility should be given for the new or even existing units to acquire necessary land to this extent.

(*Paragraph* 5.2.6)

6.61 It would be of great natural advantage to locate adequate number of large sized units for export of sugar near the coastal areas. This would, apart from lowering freight costs, reduce the load on the transport system of the country and enable speedy movements. It would also be necessary that wherever possible such regions are made surplus to the extent of export so that white sugar may not have to move there.

(*Paragraph* 5.2.7)

6.62. The picture of production economics will very much change if by-product industries are made integral with sugar factories. Such integrated projects will result in the development of good modern townships in rural areas which few other agro-industries can bring about. The Committee would strongly recommend to Government to sponsor at least a few such integrated projects in different parts of the country along with new big units or merged big units.

(*Paragraph* 5.2.8)

6.63 It is considered essential that cane cultivation and communications are developed simultaneously with the development of new factory projects and not, as done hitherto, several years after the project has come into existence. The cane growers should be permanently attached to the factory and vested interests in the production of *gur* and *khandsari* should not be allowed to spring up in the factory zone.

(*Paragraph* 5.2.9)

6.64 Wherever cane potential exists, expansion of existing units should be given priority over new units. This would not only mean lower initial investment for achieving the extra production, but would simultaneously render the existing production units more economic.

(*Paragraph* 5.2.10)

7. Acknowledgments

The Committee wishes to record its grateful thanks to the various State Governments and their concerned departments and officers; to the managements and technical staff of sugar factories and the various branches of the Indian Sugar Mills Association and Associations of Co-operative Factories for supplying the information required and participating in the discussions held by the Committee; to the co-opted members from the various States for associating with the deliberations of the Committee and giving valuable help and assistance to the Director, National Sugar Institute, for sparing the services of several members of his staff for assisting the Committee in collecting, compiling and collating the data and preparing the report and providing other facilities; and to the Directorate of Sugar and Vanaspati, the Indian Central Sugarcane Committee and the Indian Distillers' Association for supplying useful information.

Sd/-
(S. N. Gundu Rao)
Chairman

Sd/-
(J. C. Luther)
Member

Sd/-
(Gyan Chandra)
Member

Sd/-
(N. C. Varma)
Member-Secretary

Kanpur;
Dated: 30th June 1965

APPENDIX I

(*Vide* paragraph 0·3)

TEXT OF THE SPEECH DELIVERED BY SHRI V. SHANKAR, SECRETARY, FOOD, MINISTRY OF FOOD AND AGRICULTURE AT THE INAUGURAL MEETING OF THE REHABILITATION COMMITTEE.

This is your first meeting and I thought I would participate in your first deliberations in order to apprise you of the idea underlying the appointment of the Committee, to appreciate your own assessment of the nature and volume of what your work is and also to help you to plan your work during the short period that is available to you. I am really sorry that I could not give you more time, because I know the task is immense, that the sugar problems are of such a nature that any loss, of time merely adds to the problem and does not diminish it. In order to ensure that we do not have further accumulation of the intensity of that problem we thought that, the sooner the spade work was done to present the problem and project it on the canvas according to its true dimensions, the better. The urgency of solving the sugar problems has been emphasised by the developments that have taken place during the last two or three years. There is no doubt that the industry was suddenly stressed far too much in the years 1959-60 and 1960-61, when the production increased by about 50 per cent under the stimulus of incentives, both to the cane grower and the industry. There was a time when we were finding it difficult to dispose of our surpluses. With the export door almost closed, there was no escape from increasing domestic consumption and from cutting down production. If only the export markets were more favourable, we could have probably cared for the first and would not have had to resort to the second one, with its unfortunate consequences of production in subsequent years. Now it is for the first time, perhaps in the history of the sugar industry, that a move has come, in such a measure, for increasing production and it is somewhat tragic that the very first move should have left rather difficult consequences. However, one cannot help the past but one can help the future and your investigations have really been thought of in order to safeguard the future irrespective of the past. Now one of the problems that is always present in the industry is that of high cost and no one doubts that one of the contributory factors to those high costs is the existence of so many uneconomic units in the industry. The uneconomic units also involve a national waste, because any loss of sucrose content due to defect of the plant, is in itself contributory to those high costs and also means a loss to the cultivator, under the system of linking cane price to recovery. Now, you therefore. set up more or less a vicious circle, in which one link in the chain leads to another and we just do not know how to break it. The problem of uneconomic units is not a new problem; it has been there ever since the industry began. I wish, when the industry began, we had been more circumspect in regard to the size of the units which were to be set up but that was the heyday of private enterprise, and then really, we had hardly any control over the size of the unit. We had only to deal with the problems of protecting the grower against the industrys' attempts to reduce the price whenever they chose or increase it whenever they liked. You will find that in the beginning, apart from the protection that Government gave to the sugar industry, the entire approach of the State Governments and the Central Government has been, to protect the growers against the industry. It has never taken a long term attitude to the problems of the industry which were quite inherent in its very beginning. The development of the industry merely accentuated those problems and never reduced them. What we are faced with therefore is an accumulation of problems due to what I call a crisis approach both at the level of the Government and at the level of the industry. It has always been the case, whether Government dealt with matters, or industry dealt with matters, that they have thought of the immediate problems, tried to solve them in a snap manner and thereby they have created a ramshackle course of industry, the effects of which are too plain for any one to see. Our first object has therefore to be, to introduce a sense of economy in the industry, where it has seldom been visible or evident and it is from that point of view that we are making the beginning with the problems of uneconomic units today. Now the uneconomic units raise a multiplicity of problems. There may be uneconomic units where the size can admit of no expansion because of no immediate availability of cane. There may be uneconomic units where cane is available but the running of the unit itself has been so faulty and its financial problems have been so difficult, whether of the creation of the industrialists or otherwise, that notwithstanding the scope for improvement the where-withal for improvement is not there. Then there may be certain units where the area itself is of such a nature that to some extent, for the uneconomic units, despite the advantage of a liberal industrialist and efforts of the Government, there are problems which are spread over a big area. Now, there, it is not the individual unit that counts, it is the area that has to be taken into account and may be your diagnosis as well as your remedies will have to cover more than one unit in that area. Of course basically the economics of the industry, in all these matters, has also to be considered with reference to the economics of agriculture in that area. Now the economics of agriculture particularly in relation to sugarcane crop and that too in Northern India is bristling with difficulties. It is not that the soil does not permit of the cultivation of sugarcane crop, it is perhaps one of the best soils we have in the country, alluvial soil, full of fertility, despite the fact that, that fertility has been subjected to stress and strain over centuries. You have also got a fairly well established standard of husbandry. Do not forget that the families that are on the land in these areas are those who have been progressive to a degree, over periods of years in the past. I think it would be idle to deny that the standards of agricultural husbandry in U.P. is, in any way less, historically, than anywhere else. The only thing wrong is that husbandry has been rather slow in being receptive to implementing scientific ideas in the last generation or two. Now, this slowness, in taking to science, is due to reasons which are not entirely within the control of the agriculturist. We have the problems basically the problem of poverty in these areas, which have made it difficult for a large number of cultivators, with fragmented holdings, to acquire the capital base which permit of scientific cultivation. Now when you assess either the existing standard of sugarcane cultivation in the area, or under a factory, or when you assess the possibilities and potentialities of these areas you will have to bear this in mind, because there is no point in our over-estimating the capacity of the farmer in these areas merely to fit him into the pattern of industrial development. In fact it would be the industrial development that would have to fit into the pattern of improvements that you can secure, in sugarcane cultivation. I recognise that recently we have taken important decisions for the development of sugarcane cultivation in U.P., that, in the first place, results would flow after sometime, and that there is no reason to suppose that our organisational or administrative problems in implementing that development scheme will be any less testing than those of various schemes we have implemented in the past. We would, therefore, have to be somewhat cautious and conservative in accepting any improvements in agricultural standards or agricultural patterns in these areas. It is no use indulging in wishful thinking when facts point in another direction. Now, therefore, when you assess the availability of cane for rehabilitation or modernisation programmes you will have to be somewhat careful in assessing the possibilities, but of course where actualities are favourable it is easier to put your case in the continuance of that position than it would be in its improvement.

Now this is a sort of general approach to the problem that I have indicated. Ultimately we have to consider also, the economy of the integrated development of the industry itself. Now today, I think we are expecting far too much if we feel that mere production of sugar by factories is ultimately going to form a firm base for its development in future. A stage has come when we have to think not only of sugar but also its by-products and secure that as far as possible there is no waste of any by-product whatsoever just as there is no waste in any manufacturing process whatsoever. In other words the economy of the industry has to be assessed in terms of a whole, not in part, and it is from this point of view that the question of saving in fuel becomes more important because thereby you really secure a double advantage; saving in cost as well as utilisation of a waste product which is bound to make it more productive and remunerative. My second point in this connection that would arise, is the position of labour. Just as we cannot ignore the cultivator in this process, we cannot ignore the labour or the management; the performances of both have to be taken into account when we assess the economics of the industry. Now labour itself has been subjected to a number of enquiries; you have had the Wage Board, you have had the Tariff Commission but the fact is that each of the industrial units is employing labour which is not easy to handle, which like Oliver Twist always asks for more and which is not particularly anxious to match its performance with what it gets. In assessing the scope for improvement you will therefore have to take note of that aspect. That there is another problem which will specifically arise in regard to labour and that is the problem consequential to any merger that may take place or any retrenchment that may be consequential to modernisation and rationalisation. Now that is also a problem which might have to be posed even though I know very well, that it is not for you to seek a solution, but one of the lines that does occur to one specially is, that if you find any surplus labour in any particular area due to any of these factors, there we should give first priority to any scheme of utilisation of by-products that may absorb that labour. So that where you find

urself up against this problem, the need for looking into the utilisation of by-products
comes even more urgent and it might be one of the conditions of merger and modernisa-
n that a scheme for utilisation of by-products shall be implemented in order to avoid the
ation of a problem which would only add to our difficulties without reducing them.

Now then we come to the question of management. So far as management is con-
rned of course, the industry will never admit that there is anything wrong with it, but
would personally like you to assess the performance of the management also of each in-
ividual unit according to the standard which you have been following in your National
gar Institute or we have been also following in our Directorate and I would like you
ite confidentially, not as part of your report, to give your own assessment of the per-
mance of the management of various units with which you might have to deal. Now
s is important because ultimately when we have to come to the question of financial
sistance we would have to see that the management is such as can be relied upon to
liver the goods and if not we might have to, in the interest of individual industrial
velopment, think of large scale take over of factories in order to implement the pro-
amme. After all, this is not a private business line that Government is trying to assist.
is a business line which is a national enterprise that it is wanting to assist and there can
no compromise, where we find that private management is a drag on the industry, not
rely because of its inefficiency, but also because of its lack of attention to improve-
nt because of misuse of capital funds or mismanagement and things of that nature. I
uld not be able to pass a scheme which merely means handing over of so much loan
a concern which can run through it in a period of time and which will not help itself.
that the question of rehabilitation and modernisation is quite closely linked with the
ndard of performance of management in the past, and I think we shall have to take note
that factor as we consider the financial picture and the financial requirements of those
rticular industrial units.

Now I have given you a brief indication of the type of work that I envisaged when we
ppointed this Committee. Now I do not minimise the fact that two months is very short
me for you. I would not mind if you in this period of two months, can at least give some-
ing to start upon. Now it does not matter if you cannot complete for instance all the
nits. So long as you can tell Government a sort of an average picture that is going to face
on the problem of rehabilitation and modernisation and deal with at least some of the
orst cases in a manner, that would enable us to assess the position as a whole on that basis.
find you have selected 73 units for your first attempt to deal with the problem. Out of
ese 73 units, I think so long as you can complete in much fuller details the worst cases
nd in somewhat more general manner the others, your task would have been done and
u will probably find that if suppose for instance out of 73 you can make a detailed
udy of 36, you will probably find that the other 36 could be handled in a more general
ay and you can assess the problems in regard to those industries in that manner. But
far as their performances and other standards are concerned, there, I would like you
cast your net a little wider because I do feel that is an aspect which would be prominently
efore us when we consider this whole problem. Government or public exchequer is
not a charitable institution where you can distribute alms to anybody who comes; it has
to base itself on certain norms and standards and I do not think that you will be able to
avoid taking over of a substantial number of factories in order to carry out this
ogramme ultimately. Now so far as your work is concerned, if any of you have any
oints that you would like to seek clarification from me or on which you would like to get
advice, you can do so.

APPENDIX II

(*Vide* paragraph 0·4)

NATIONAL SUGAR INSTITUTE

Government of India, Ministry of Food & Agri.
(Department of Food)

Gram—Sharkarasanstha
Phone : 37111 (3 lines)

No. Tech./Reh./Mod.
Kanpur, the 3rd July, 1963

From
The Director
To
The Manager
(All Sugar Factories)

SUBJECT—*Rehabilitation of uneconomic factories.*

Dear Sir,

As you are probably aware the Government of India in the Ministry of Food & Agriculture have appointed a Committee with me as the Chairman to investigate into the needs of rehabilitation and modernisation of uneconomic units in the sugar industry and to recommend steps to be taken. With a view to making a proper study of the exact situation obtaining in the sugar factories, a questionnaire has been prepared and is enclosed herewith. I shall be grateful if the information according to the questionnaire is supplied in respect of your factory at the earliest, preferably within a fortnight. Soon after the receipt of information and its scrutiny, it is proposed to call the Managers, Chief Chemists and Chief Engineers of the factories concerned for discussion to Kanpur with a view to clarifying such points as may need clarification. A tentative blue print will then be drawn up in consultation with the factory representatives. The factory executives referred to above should, therefore, keep themselves in readiness to come to Kanpur on receipt of telegrams from the Institute. This discussion at Kanpur will be followed by a visit to the factories by the members of the Committee for discussion on the spot and finalisation of the blueprints.

The Committee has been asked by the Government to submit its report by the end of August. As the Government is anxious to do everything possible to ensure that the uneconomic units are put on a sound footing and as the Committee's efforts in this direction will very much depend on the extent of co-operation, which the Committee will receive from you, I have every hope that you will assist the Committee in every way. If this opportunity is missed it may be a long time before another chance may present itself.

It will be appreciated that the matter is of vital interest to the future well-being of the factories themselves and therefore the data furnished, should be as exhaustive and realistic as possible and submitted as early as possible. If from the information supplied the Committee is able to present a realistic picture to the Government, this will go very far in ameliorating the condition of the industry.

I hope, therefore, that you will put in your best endeavour to this task and comply with my request with the utmost urgency and consideration. The matter being so important you must already have devoted considerable thought to it and it should not be difficult for you to furnish the information sought and give sound and realistic proposals. If there is any information which is not covered by our questionnaire and which you think would be helpful to me in making a better assessment of the situation of your factory, please supply it unhesitatingly.

Yours faithfully,
Sd/- S. N. GUNDU RAO
Chairman
Committee for Rehabilitation of Uneconomic Units.

PROFORMA No. I

Statement Regarding Cane Supply Position

(Give figures for various items for each of the last five years)

Sl. No.	Particulars
1.	Total cultivable land in the reserved area of the factory (In thousand Acres).
2.	Total cultivable land in the free area of the factory (In thousand Acres).
3.	Acreage under cane :
	(*a*) Reserved Area
	(*b*) Free Area
4.	Acreage irrigated :
	(*a*) Reserved Area
	(*b*) Free Area
5.	Total production of cane (estimated) (In thousand — tonnes)
6.	Total amount of cane crushed (In thousand tonnes).
7.	Average yield of cane per Acre (In Tonnes).
8.	Average supply of cane to the factory per Acre (Tonnes)
9.	Cane utilised per cent produced in area for :
	(*a*) White Sugar
	(*b*) Seed
	(*c*) Gur & Khandsari
	(*d*) Other purposes
10.	Maximum yield of cane per Acre (Tonnes)—obtained in Prize Plots.
11.	Amount of Fertilisers used per 100 Acres in Tonnes.
12.	Amount spent on cane development :
	(*a*) By the factory
	(*b*) By the Society
	(*c*) By the Government
13.	Quantity of cane supplied at the factory gate :—
	(*a*) Quantity (in thousand tonnes)
	(*b*) Percentge of Total
14.	Quantity of cane supplied at the Road Centre :—
	(*a*) Quantity
	(*b*) Percentage of Total

सत्यमेव जयते

Sl. No.	Particulars

15. Quantity of cane supplied at the Rail Centre :—
    (*a*) Quantity
    (*b*) Percentage of Total

16. Quantity of cane crushed of different varieties.

17. Percentage of cane crushed of rejected varieties.

18. Total length of Roads (in Kilometres)
    (*a*) Pucca
    (*b*) Kachha
    (*c*) Proposed

19. No. of gross season days

20. Stoppages due to 'No Cane'
    (*a*) Total Hours.
    (*b*) Per cent available Hours.

21. Total No. of growers supplying cane to the factory.
    No. of growers supplying 2 tonnes & below
    No. of growers supplying 5 tonnes & below
    No. of growers supplying 50 tonnes & below
    No. of growers supplying 500 tonnes & below
    No. of growers above 500 Tonnes

General

1. Plans for intensive cultivation and programme (Next 5 years).
2. Targetted yield per Acre (Next 5 years).
3. Present bottlenecks in cane supply.
4. Scope for increasing (*i*) Gate Cane
    (*ii*) Rail Cane
    (*iii*) Road Cane
5. Suggested steps for improving cane availability and transport.
6. Maximum capacity of the factory for which cane supply can be ensured in next 2-3 years by
    (*i*) Intensive Cane Cultivation
    (*ii*) Increasing reserved area
    (*iii*) Prevention of diversion
7. Any other cane development programme now taken up or proposed. If so year-wise allocation of funds for the purpose for the next 5 years by,
    (*a*) Factory
    (*b*) Society/Government
8. Approximate estimated crop (In thousand tonnes) during next 5 years.
9. Steps proposed to be taken by the factory to attain the targetted supplies of cane.

PROFORMA No. II

Crushing Capacity

1. Name of Factory
2. Year of establishment
3. Make of Plant
4. Licensed Capacity (Tonnes/day)
5. Average crushing per gross season day (Average of 3 seasons) Tonnes/Day.
6. Rate of crushing per 24 hours operation (3 season average) Tonnes.

सत्यमेव जयते

PROFORMA No. 111

Time Account

Name of Factory

Sl. No.	Season	Total Hours Available	Total Hours Lost	Hours lost % Available	Hours Lost for				
					Cleaning & Holidays	Mech.	Chem.	Cane shortage	Misc.
1	2	3	4	5	6	7	8	9	10
	1962—63								
	1961—62								
	1960—61								
	1959—60								

PROFORMA No. IV

Quality of Cane

Name of Factory

Season	Sugar % Cane	Fibre % Cane	Primary Juice	
			Brix	Purity
1	2	3	4	5
1962—63				
1961—62				
1960—61				
1959—60				

सत्यमेव जयते

PROFORMA No. V

Technical Results

1. Name of Factory
2. Process of Clarification

Sl. No.	Particulars	Seasons			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Duration of Seasons (days)				
2.	Pol Balance (cane=100)				
	(*a*) Pol in cane				
	(*b*) Pol in sugar				
	(*c*) Loss in Bagasse				
	(*d*) Loss in Press Mud				
	(*e*) Unknown Loss				
	(*f*) Total Losses .				
3.	Level of Efficiency:—				
	(*a*) Mill Extraction				
	(*b*) Reduced Mill Extraction . .				
	(*c*) Boiling House Recovery . .				
	(*d*) Reduced Boiling House Recovery .				
	(*e*) Overall Recovery .				
	(*f*) Reduced Overall Recovery .				
4.	Bagasse:—				
	(*a*) Pol per cent				
	(*b*) Moisture per cent .				
	(*c*) Bagasse % cane .				
5.	Press Mud:—				
	(*a*) Pol per cent . .				
	(*b*) Press mud % Cane .				
6.	Final Molasses—				
	(*a*) % Cane				
	(*b*) Brix %				
	(*c*) Purity				

PROFORMA No. VI.

Sugar Quality

(To be reported in terms of percentage of total production).

1. Name of Factory
2. Process of Clarification

Sl. No.	I. S. S. Grade		Seasons		
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	30 A				
	30 B				
	30 C				
	30 D				
	30 E				
	TOTAL				
2.	29 A				
	29 B				
	29 C				
	29 D				
	29 E				
	TOTAL				
3.	28 A				
	28 B				
	28 C				
	28 D				
	28 E				
	TOTAL				
4.	27 A				
	27 B				
	27 C				
	27 D				
	27 E				
	TOTAL				

सत्यमेव जयते

PROFORMA No. VII

Consumption of Fuel

Name of the Factory

Season	Bagasse % cane		Extra fuel consumed % cane				Total fuel consumed in terms of bagasse*
	Pro-duced	Saved	Furnace oil	Coal	Firewood	Total extra fuel in terms of bagasse	
1	2	3	4	5	6	7	8
1962-63							
1961-62							
1960-61							
1959-60							

Note :—
Wood : Bagasse :: 1:1·3
Coal : Bagasse :: 1:2·5
Furnace Oil : Bagasse :: 1:5·0

सत्यमेव जयते

PROFORMA NO. VIII

Utilisation of By-products

1. Name of Factory

2. Production of by-products in tonnes:

	1962-63	1961-62	1960-61	1959-60	1958-59
Bagasse					
Molasses					
Press Mud					

3. Utilisation of by-products:

(*i*) Bagasse (Tonnes)

	1962-63	1961-62	1960-61	1959-60	1958-59
(*a*) used as fuel					
(*b*) saved					
(*c*) sold					
(*d*) value realised					
(*e*) purpose for which sold					
(*f*) utilised in any other manner (state the manner)					

(*ii*) Molasses	1962-63	1961-62	1960-61	1959-60	1958-59
(*a*) How utilised					
(*b*) Surplus left					
(*c*) Quantity utilised					
(*d*) Value realised					

(*iii*) Press mud	1962-63	1961-62	1960-61	1959-60	1958-59
(*a*) How utilised					
(*b*) Quantity					
(*c*) Value realised					
(*d*) Surplus left					

(*iv*) Cost incurred in disposal

(*v*) Proposals for better utilisation in future

4. If any of the above by-products were surplus and could not be utilised properly, state the reasons why this could not be done

5. Have you any scheme for more profitable utilisation of any of the above by-products ? If so give details

सत्यमेव जयते

PROFORMA NO. IX

Economic Status

1. Name of Factory
2. Profit made or loss incurred in each of the last ten years. Enclose copies of Balance Sheets of last ten years
3. Cost of production of sugar in the factory in each of the last ten years under the following heads (Give a tabulated statement)
    - (*a*) Cane price including cane purchase tax and society Commission
    - (*b*) Power & Fuel
    - (*c*) Chemicals & filter cloth
    - (*d*) Salaries and wages
    - (*e*) Repairs, maintenance and consumable stores
    - (*f*) Depreciation
    - (*g*) Overheads
    - (*h*) Packing
    - (*i*) Interest on fixed working Capital
    - (*j*) Total cost
    - (*k*) Less credit for receipts
    - (*l*) Net cost of production
    - (*m*) Average price realised from sale of sugar
    - (*n*) Gross profit (+) or loss (—) per md. of sugar (*m-l*)
    - (*o*) Bonus or gratuity paid
    - (*p*) Managing Agents' Commission
    - (*q*) Selling Commission
    - (*r*) Interest on borrowed Capital
    - (*s*) Dividends on preference shares
    - (*t*) Dividends on ordinary shares
    - (*u*) Income Tax
    - (*v*) Net profit

सत्यमेव जयते

NOTE.— Enclose copies of returns in Cost of Production Schedule (C.P.S.) forms as prescribed by the Directorate of Sugar and Vanaspati, Ministry of Food and Agriculture, New Delhi.

PROFORMA NO. X

Proposals for Extension, Rehabilitation & Modernisation

Name of Factory

1. Present capacity
2. Proposed capacity
3. Additions and alterations required for expansion, rehabilitation and modernisation

Name of machinery to be added, altered or replaced	Cost of addition	Cost of erection	Estimated cost of surplus machinery
1	2	3	4

TOTAL COST—

4. How is it proposed to phase implementation of the above programme
5. Cost proposed to be met from own resources
6. Financial assistance required
7. Amount of foreign exchange involved (items & value)
8. If loan taken how is it proposed to be paid back
9. Other problems of the factory the solution of which would help implementation of above programme and the bodies that should attend to such problems
10. Any other information relevant to above issues

सत्यमेव जयते

PROFORMA NO. XI

Scheme for Labour Rationalisation

1. Name of Factory
2. Existing strength of labour
3. Existing wage bill per month
4. Labour considered surplus under existing conditions
   - (*a*) Skilled
   - (*b*) Semi-skilled
   - (*c*) Unskilled
5. Labour which may be surplus after effecting modernisation/merging—
   - (*a*) Skilled
   - (*b*) Semi-skilled
   - (*c*) Unskilled
6. Saving expected in wage bill
7. Manner in which it is proposed to employ surplus labour
8. Incidence of saving in cost of production to rationalisation/merging

सत्यमेव जयते

PROFORMA No. XII

Scheme for Merging

1. Name of Factory
2. If there is no scope for increasing cane supplies, what are your proposals for:—
   (*a*) merging your unit with the neighbouring unit
   (*b*) neighbouring unit with yours
3. If merger is proposed, give the details of the scheme of merging and proposals regarding utilisation of surplus labour.

सत्यमेव जयते

APPENDIX III

(*Vide* paragraph 0.4)

Information for. . ... .State

For the Report of the Rehabilitation Committee

1. Situation of the State (longitudes and latitudes between which the State falls).
2. Average yearly rainfall and the months in which the rainfall is concentrated.
3. Minimum and maximum temperatures in the State during the year and the months in which they are respectively obtained.
4. Relative humidity during the year.
5. Types of soil in the State and the divisions of the State on the basis of the soil (soil map of the State).
6. Total population of the State, its area and density of population.
7. Percentage workers in the State.
8. (*a*) Percentage of industrial workers to the total workers.
   (*b*) Percentage of workers in sugar industry to the total industrial workers.
9. Percentage of agricultural workers.
10. Total cultivable land in the State.
11. (*a*) Total area under cane in the State.
    (*b*) Important crops of the State and area under each of them.
12. Percentage of State's cane area to the all India's cane area.
13. Total area under cane falling within the reserved zone of the sugar factories situated in the State.
14. Per capita income.
15. District-wise distribution of the factories and factory wise crushing capacity.
16. Number of working sugar factories in the State from the year 1936 to 1963 (year wise).
17. Total installed capacity of sugar factories in the State from the year 1936 to 1963 (year wise).
18. Total production of white sugar for the above years (year wise).
19. Recovery year wise for above period.
20. Amount of cess collected (in lac Rs.) year wise (data to be given from the year in which cess was imposed).
21. Utilisation of the cess year wise under following heads :
    (*i*) Cess spent on development work.
    (*ii*) Cess spent on developmental staff.
    (*iii*) Other purposes.
22. Organisational set-up of the Cane Development and Marketing Department at the State level and of the factories.
23. Map of the State showing the location of existing and proposed factories and their cane areas.
24. Targets of sugar production fixed for the 3rd and 4th Plans and extent of achievement in the 3rd Plan.
25. Reasons for shortfall in achievements of targets, if any.
26. Schemes of cane development in force or envisaged.
27. Existing credit facilities given to cane growers for development of cane.

28. Position of cane price payment to the growers by the factories indicating factory wise dues of cane price and interest, if any.
29. Position with regard to payment of cess and dues and interest, if any.
30. What are other major industries of the State-agro-based or otherwise.
31. What is the position of the sugar industry *vis-a-vis* other important industries.
32. How does the sugarcane crop occupy an important place in the agricultural economy of the State.
33. Statement of present installed cane crushing capacity, factory wise and the expansion in capacity as recommended by the State Govt.
34. (*a*) Yield of cane per acre (last four years, year wise) in the State and a note on the method of estimating the same.
    (*b*) Total production of cane in the State during last four years (year wise).
    (*c*) Total cane crushed by the vacuum pan factories during last 4 years (year wise).
35. Views of the State Govt. with regard to providing financial assistance to existing sugar factories to enable them to rehabilitate, modernise and expand to the extent desired.

सत्यमेव जयते

SEED

Sl. No.	Name of Factory	Area under cane	Amount of seed requirement (yearly)	Amount of seed proposed to be distributed by development department and any other agency (yearly)	Balance requirement	Proposals to meet the balance requirement	Cost involved
1	2	3	4	5	6	7	8

IRRIGATION

Sl. No.	Name of Factory	Present capacity (tonnes/day)	Target capacity (tonnes/day)	Cane supply (yearly) during last 3 years (tonnes)		Total cultivable area (acres) in the zone of the factory	Total irrigated area acres	Area irrigated % cultivable	Area under cane	Per cent area irrigated of the total area under cane
				Average	Maximum					
1	2	3	4	5	6	7	8	9	10	11

IRRIGATION—*contd.*

Existing means of irrigation					Proposed plans and works to supplement the means of irrigation					Area expected to be irrigated by proposed works	Balance area to be irrigated
Canals	State tubewells	Private tubewells	Wells & Rahats	Pumping sets & others	Canals	State tubewells	Private tubewells	Wells & Rahats	Pumping sets & others		
12	13	14	15	16	17	18	19	20	21	22	23

सत्यमेव जयते

IRRIGATION—*contd.*

Requirements of the means of irrigation for the balance area to be irrigated as in previous column					Cost involved in the preceding items	Funds to be met by various agencies	Agency proposed to undertake the work
Canals	State tubewells	Private tubewells	Wells & Rahats	Pumping sets & others			
24	25	26	27	28	29	30	31

MANURES AND FERTILIZERS

Sl. No	Name of Factory	Area under cane in acres	Requirement of manures and fertilizers in tonnes (yearly basis)				Provision made by development department and/or other agencies, if any			
			(a) Chemical fertilizers	(b) Cakes	(c) Green manure seed	(d) Compost	(a) Chemical fertilizers	(b) Cake	(c) Green manure seed	(d) Compost
1	2	3	4	5	6	7	8	9	10	11

MANURES AND FERTILIZERS—*contd.*

Balance Requirement				Cost involved	
(a) Chemical fertilizers	(b) Cakes	(c) Green manure	(d) Compost	in distribution	in subsidy
12	13	14	15	16	17

TRANSPORT AND COMMUNICATIONS

Sl. No.	Name of the Factory	Present capacity	Targetted potential capacity	% Gate cane	% Road cane	% Rail cane	Existing Road in the Factory Zone in Kms.		Total length of roads further required to cater to the needs of transport for the targetted potential capacity	
							Pucca	Kachha	Main Roads	Feeder Roads
1	2	3	4	5	6	7	8(a)	8(b)	9(a)	9(b)

TRANSPORT AND COMMUNICATIONS—*contd.*

Road length already proposed and pending construction			More roads to be constructed in Kms.	No. of bridges required	No. of culverts required	Cost estimates of (Col. No. 11, 12 & 13)	Agency to meet the funds given in Col. 14	Agency to take up the construction work	Estimated time for completion of the work
Road length with P.W.D. State	Under contributory scheme with P.W.D. or Cane Deptt.	Under any other agency							
10(a)	10(b)	10(c)	11	12	13	14	15	16	17

Statement showing dividends paid on ordinary and preference shares by sugar factories since 1952-53 in.............State

Name of Factory	Dividends paid on ordinary shares										Dividends paid on preference shares									
	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21

Statement showing profits after tax or financial losses incurred by sugar factories in........state since 1952-53

Name of factory	Profit after tax (+) or loss (—) in thousands of rupees										Total
	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	
1	2	3	4	5	6	7	8	9	10	11	12

APPENDIX IV

(*Vide* paragraph 0·4)

List of various State Government Officials and representatives of the factories with whom discussions were held

1. EAST UTTAR PRADESH — *20th August*, 1963 to *29th August*, 1963

Sl. No.	Organisation	Name and designation
1	2	3
1.	U.P. Govt.	Sarvashri M. Zunnurian, Cane Commissioner; J. N. Tewari; Joint Secretary (Industries) L. M. Bhatia, Labour Commissioner; Jagdish Prasad, Chief Engineer (P.W.D.); J. P. Jain, Chief Engineer (Irrigation); H. C. Kaushal, Superintending Engineer (Planning Deptt.); J. K. Pande, Director (Directorate of Economics, Intelligence and Statistics); B. K. Tandon, Additional Director (Directorate of Agriculture); Kunwar Singh, Dy. Director (Directorate of Industries); G. P. Seth, Dy. Cane Commissioner; B. R. Chaturvedi, Dy. Cane Commissioner; Y. N. Bali, Statistical Officer (Cane Deptt.); R. K. Dar, Collector (Deoria District) M. C. Mathur, Executive Engineer (P.W.D., Basti); M. Gopal, Executive Engineer (Irrigation; Deoria).
2.	Burhwal Factory . . .	Sarvashri Daya Ram, Managing Director; D. K. Dikshit, Managing Director; R. L. Tripathi, General Manager; C. M. Misra, Chief Chemist; V. R. Gupta. Chief Engineer.
3.	Balrampur Factory . . .	Sarvashri D. N. Sinha, General Manager; R. B. Asthana, Chief Engineer.
4.	Tulsipur Factory . . .	Sarvashri P. P. Joshan, Chief Chemist; K. N. Srivastava, Chief Engineer, S. R. Agarwal, Asstt. Manager.
5.	Barabanki Factory . . .	Sarvashri H. D. Agarwal, Manager; S. B. Misra, Chief Engineer; K. B. Mathur, Chief Chemist; R. S. Das, Cane Manager.
6.	Motinagar Factory . . .	Sarvashri V. D. Jhunjhunwala, Managing Director; L. K. Jhunjhunwala; Managing Director; M. C. Chaudhary, Works Manager; B. R. Vohra, Commercial Manager; N. R. Khanna, Chief Chemist; B. N. Agarwal, Cane Manager.
7.	Shahganj Factory . . .	Sarvashri Kashi Prasad, Director; Narain Das, Director; B. N. Agarwal, Works Manager; Balram Singh, Chief Engineer.
8.	Jarwal Road Factory . . .	Sarvashri B. P. Misra, Chief Chemist; K. S. Kumar, Chief Engineer.

1	2	3
9.	Basti & Walterganj Factories . .	Sarvashri D. R. Narang, General Manager; S. S. Ahuja, Chief Chemist (Basti); Inder Singh, Chief Engineer (Basti); P. L. Bagai, Asstt. Manager (Walterganj); Chandan Lal, Cane Manager (Walterganj).
10.	Babhnan Factory	Sarvashri G. S. Dadheech, Manager; P. K. Seksaria, Assistant Manager, S. B. Singh Chief Chemist; D.N. Sinha, Chief Engineer.
11.	Munderwa Factory	Sarvashri R. C. Naik, Secretary; S. V. R. Vaid, Chief Chemist; J. P. Srivastava, Chief Engineer; R. K. Roy, Cane Manager.
12.	Nawabganj Factory . . .	Sarvashri Krishna Deva, General Manager; Amar Singh, Chief Chemist; Devi Dayal, Chief Engineer.
13.	Biswan Factory	Sarvashri S. D. Tewari, Factory Manager; M. D. Tewari, Asstt. Manager; A. S. Bhuller, Chief Chemist; G. N. Kumar, Chief Engineer.
14.	Khalilabad & Anandnagar Factories .	Sarvashri S. R. Bhowshinghka, General Manager; S. R. Sharma, Assistant Manager (Khalilabad); S. B. Srivastava, Chief Chemist (Khalilabad); R. A. Misra, Chief Engineer (Khalilabad), S. C. Mahrish, Cane Manager (Khalilabad); J. N. Sharma, Manager (Anandnagar), N. C. Nagpal Chief Chemist (Anandnagar); S. D. Chatterji, Chief Engineer (Anandnagar).
15.	Ramkola (P) Factory . . .	Sarvashri S. R. Kohli, Ganeral Manager; M. R. Suri, Factory Manager; J. N. Ghosh, Chief Chemist; N. D. Batra, Chief Engineer; S. R. Sabharwal, Cane Manager.
16.	Ramkola (MK) Factory . . .	Sarvashri D. R. Khaitan, Director; R. M. Misra, General Manager; K. S. Shah, Chief Chemist; M. A. Adhyaru, Chief Engineer; N. A. Warsi, Cane Manager.
17.	Lakshmiganj Factory . . .	Sarvashri J. P. Khaitan, Managing Director; G. S. Khaitan, Managing Director; D. L. Agrawal, Secretary; J. S. Rohatgi, Works Manager; U. S. Kushwaha, Chief Chemist; K. P. Singh, Chief Engineer.
18.	Captainganj Factory . . .	Sarvashri J. P. Sharma, Manager; G. K. Sinha, Cane Superintendent.
19.	Pipraich Factory	Sarvashri K. P. Murarka, Director; M. L. Berdia, Commercial Manager; S. C. Varma, Chief Chemist; S. P. Bhartia, Chief Engineer.
20.	Ghughli Factory	Sarvashri Roshan Lal, Manager; H. L. Bhardwaj, Chief Chemist; K. S. Kumar, Chief Engineer.
21.	Khadda Factory	Sarvashri J. A. Dikshit, General Manager; S. P. Sanyal, Chief Chemist; C. B. Singh, Chief Engineer; B. S. Singh, Chief Accountant.

1	2	3
22.	Siswa Bazar Factory . .	Sarvashri H. R. Kamani, Managing Director; R. S. Rai, General Manager; M. P. Poddar, Commercial Manager; S. C. Sen, Chief Chemist; B. B. Mall, Chief Engineer.
23.	Chittauni Factory . . .	Sarvashri S. P. Sabharwal, General Manager; J. Prasad, Secretary; N. Basu, Chief Chemist; B. Dutt. Chief Engineer; Ram Singh, Cane Manager.
24.	Padrauna, Kathkuiyan & Gauri Bazar Factories . . .	Sarvashri R. R. Agrawal, Administrator (Sugar); J. L. Bagchi, Advisory Chemist; R. S. Das Badhwar, General Manager (Padrauna); Romesh Chand, General Manager (Kathkuiyan); G. C. Joshi, General Manager (Gauri); L. K. Pramanik, Chief Chemist (Padrauna); B. D. Pandey, Chief Engineer (Padrauna); S. K. Bhattacharya, Chief Chemist (Kathkuiyan); A. K. Shukla, Chief Engineer (Kathkuiyan).
25.	Deoria & Baitalpur Factories .	Sarvashri S. S. Thapar, General Manager; B. Subba Rao, Chief Chemist (Deoria); S. C. Roy, Chief Engineer (Deoria); S. N. Sharma, Cane Manager (Deoria); Raj Kumar, Manager (Baitalpur); C. A. Mehta, Chief Engineer (Baitalpur).
26.	Sardarnagar Factory . .	Sarvashri S. S. Majithia, Chairman; G. S. Majithia, Managing Director; D. S. Majithia, Managing Director; U. S. Sahai, Chief Chemist; J. H. Perkins, Chief Engineer; R. N. Upadhya, Cane Superintendent; Jamait Singh, Secretary.
27.	Bhatni Factory	Sarvashri P. C. Jhunjhunwala, Managing Partner; P. B. Misra, General Manager; R. R. Wankhade, Superintending Engineer; B. N. Pandey, Chief Chemist; P. R. Sharma, Cane Manager.
28.	Seorahi Factory . . .	Sarvashri D. Kumar, General Manager; N. K. Pant, Assistant Manager; P. B. Satsangi, Chief Chemist.
29.	Purtabpore Factory . . .	Shri K. K. Puri, General Manager.
30.	Indian Sugar Mills Association .	Sarvashri H. R. Kamani, President, East U. P. Branch; L. N. Wahi, Secretary, U.P. Branch; J. C. Aurora, Secretary, East U. P. Branch.
31.	General Interests . . .	Sarvashri Kailash Singh, M.L.A., J. P. Misra, Director, Co-operative Cane Development Union, Bhatni; Lal Bachan Singh, Chairman, Coop. Cane Dev. Union, Bhatni; Harasit Dutta, General Secy, Naya Chini Mazdoor Sangh; R. N. Bharti, Regional Labour Organiser, I.N.T.U.C.

सत्यमेव जयते

2. NORTH BIHAR

12th September, 1963
to
18th September, 1963

Sl. No.	Organisation	Name and Designation
1	2	3
1.	Bihar Government . .	Sarvashri Jitendra Prasad, Cane Commissioner; K. L. Ramaswamy, Industrial Adviser (Chemical); F. Ahmed, Labour Commissioner; A. S. Chakravarti, Director, Sugarcane Research Institute, Pusa; A. P. Prasad, Chief Engineer (Irrigation); Y. K. Lall, Chief Engineer (P.W.D.); K. N. Tewari, Planning Officer; N. K. N. Singh, Asstt. Cane Commissioner; S. N. Prasad, Asstt. Cane Commissioner; J. K. Kohli, Officer on Special Duty (Cane Department); B. P. Singh Cane Development Officer (Cane Deptt.); J. S. Prasad, Executive Engineer, Minor Irrigation Deptt. (Chupra); R. P. Shukla, Assistant Registrar, Cane Growers' Co-operative Society (Gopalganj); R. P. Singh, Assistant Registrar, Co-operative Societies (Bettiah); R. Subramaniam, Senior Cane Inspector (Chupra); C. N. S. Sharma, Special Cane Inspector (Champaran District).
2.	Marhowrah, Barrahchakia and Chanpatia Factories.	Sarvashri S. S. Kothari, Administrator; J. L. Bagchi, Advisory Chemist; R. Hussain, General Manager (Marhowrah); M. Salim, General Manager (Barrahchakia); H. S. Jabbal, General Manager, (Chanpatia); S.N. Bhattacharya, Process Operator (Barrahchakia); S. N. Pandey, Cane Superintendent (Barrachhakia); H. B. Chowdhary, Chief Engineer (Chanpatia).
3.	Sasamusa Factory . . .	Sarvashri A Hasan, Managing Director; M. Zakaria, Dy. Chief Engineer; Bashiruddin, Cane Manager; B. P. Ambasta, Accountant.
4	Siwan Factory . . .	Sarvashri R. N. Dadu, General Manager; R. D. Agrawal, Chief Engineer; M. V. Lele, Cane Manager.
5.	Sidhwalia Factory . . .	Sarvashri M. L. Jaithalia, General Secretary; A. N. Kapoor, Chief Chemist; S. P. Garg, Chief Engineer, R. P. Sahi, Cane Development Officer.
6.	Pachrukhi Factory . . .	Sarvashri J. M. Tanna, General Manager; Ajit Singh, Chief Chemist; G. S. Hanspal, Chief Engineer.
7.	Harkhua Factory . .	Sarvashri C. S. Kothari, General Manager; N. B. Singh, Chief Chemist; R. P. Singh, Chief Engineer.
8.	Motihari Factory . . .	Sarvashri C. N. Agrawal, General Manager; B. L. Lohia, Executive; D. K. Acharya, Assistant Manager; Janki Prasad, Chief Chemist; J. B. Panchal, Chief Engineer; M. R. Limaye, Cane Agronomist, R.C. Tewari, Asstt. Cane Manager.

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9.	Garaul Factory . . .	Sarv Shri D. P. Ghosh, Managing Director R. M. Datta, Managing Director; S. R. Jha, General Manager; K. L. Chaddha, Chief Chemist.
10.	Motipur Factory . . .	Sarv Shri O. A. Rahim, Managing Director; Abu Mohammed, Secretary; Birbahadur Singh, Chief Chemist; Jagat Singh, Cane Manager.
11.	Sugauli Factory . . .	Sarv Shri M. Hanif, Director; A. Ali, Director; B. N. Moitra, Chief Chemist; R. C. Sharma, Chief Engineer; V. Prasad, Cane Manager A. Khan, Labour Welfare Officer.
12.	Majhaulia Factory . .	Sarv Shri S. S. Kanoria, General Manager; S. R. Jhunjhunwala, Asstt. Manager; J. P. Pandey, Chief Chemist; S. N. Sharma, Chief Engineer; H. H. Joseph, Cane Manager; B. Singh, Cane Development Officer.
13.	Narkatiaganj Factory . .	Sarv Shri R. M. Rungta, General Manager; H. P. Moona, Chief Chemist; R. B. Heda, Cane Manager; S. R. Biyani, Chief Accountant.
14.	Bagaha Factory . . .	Sarv Shri G. D. Sharma, Chief Chemist and Factory Manager; P. L. Kalra, Chief Engineer; C. L. Agrawal, Cane Manager.
15.	Harinagar Factory . . .	Sarv Shri Narayan Lal, Managing Director; Bansi Lal; R. B. Krishna; M. P. Singh, General Manager.
16.	Lauriya & Hathua Factories .	Sarv Shri D. R. Parashar, Superintending Technologist; D. P. Jain, Works Manager (Lauriya); Atul Kumar, Works Manager (Hathua); M. L. Agrawal, Chief Chemist (Lauriya), B. L. Srivastava, Chief Engineer (Lauriya); B. C. Jha, Asstt. Works Manager (Lauriya); K. N. Gupta, Cane Manager (Lauriya); Lalji Singh, Sr. Cane Development Officer (Lauriya); B. Bose, Chief Chemist (Hathua); B. D. Gandha, Chief Engineer (Hathua); K. K. Dixit, Asstt. Manager (Hathua); L. P. Singh, Cane Manager (Hathua).
17.	Samastipur Factory . .	Sarv Shri D. P. Agrawal, Director; L. N. Bhargava, Works Manager; M. G. Godbole, Chief Engineer; R. B. Prasad, Cane Superintendent; R. N. Mullick, Process Operator; S. Chandra, Personnel Officer; N. K. Dutta, Labour Welfare Officer.
18.	Hasanpur Road Factory . .	Sarv Shri B. M. Barthiya, General Secretary; M. L. Khandelia, Asstt. Secretary; B Chakravarty, Chief Chemist; N. K. Chowdhary, Asstt. Cane Manager.
19.	Righa Factory . . .	Sarv Shri S. K. Parekh, Secretary; J. S. Srivastava, Factory Manager; S. N. Sinha, Chief Chemist.
20.	**Ryam Factory** . . .	Sarv Shri M. D. Khaitan, Secretary; M.P. Ghuwalewala, Factory Manager; Kasturi Lal, Chief Engineer: H. C. Sood, Chief Chemist; H. R. Sharma, Cane Manager.

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21.	Sakri & Lohal Factories . .	Sarv Shri W. F. Malden, General Manager; N. C. Joshi, Factory Manager (Sakri); S. P. Srivastava, Cane Superintendent (Sakri); M. N. Ghosh, Factory Manager (Lohat); J. Ahmed, Cane Superintendent (Lohat).
22.	Indian Sugar Mills Association .	Shri C. J. Mehta, Secretary (Bihar Branch).
3.	**PUNJAB**	*25th September*, 1963 to *27th September*, 1963
1.	Punjab Government . .	Sarv Shri Sher Jung Singh, Cane Commissioner; B. B. Vohra, Secretary (Agriculture Deptt,); Prem Kumar, Additional Secretary, P W.D. (Building & Roads); P. C. Sharma, Under Secretary, P.W.D. (Building & Roads); Pritam Singh, Director of Agricultur S. D. Prasad, Joint Director (Industries), R. K. Kapila, Dy. Director (Industries), V. P. Johar, Registrar, Co-operative Societies; Shyam Lal, Dy. Labour Commissioner; V. P. Dhawan, Dy. Director (Food & Supplies); Manmohan Singh, Asstt. Cane Commissioner; Sukhdeo Singh, Economic Botanist; P. P. Shukla, Officer on Special Duty (Labour Deptt.); Ujagar Singh, Ex. Engineer (Irrigation); P. S. Sanghire, Ex. Engineer, P.W.D. (Building & Roads).
2.	Panipat Factory . . .	Sarv Shri Jagbir Sawhney, General Manager; C. K. Gupta, Chief Chemist; G. L. Sachdev, Chief Engineer; Ranvir Singh, Cane Superintendent.
3.	Rohtak Factory . . .	Sarv Shri J. S. Sarohia, General Manager; K. L. Bhatia, Chief Chemist.
4.	Bhogpur Factory . . .	Sarv Shri W. C. Anand, General Manager; Harbans Singh, Cane Manager.
5.	Yamunanagar Factory . .	Sarv Shri A. N. Sapra, General Manager; Lal Chand, General Manager (Workshop); S. C. Sharma, Chief Chemist.
6.	Phagwara Factory . .	Sarv Shri Bishen Khan, General Manager; P. C. Ganguli, Chief Chemist; Vasu Deva, Factory Manager.
7.	Dhuri Factory . . .	Shri Dalbir Singh, General Manager.
8.	Indian Sugar Mills Association .	Shri C. K. Virmani, Secretary, Punjab Branch.
4.	**SOUTH BIHAR**	*5th November*, 1963.
1.	Bihar Government . . .	Shri Jitendra Prasad, Cane Commissioner.
2.	Dalmianagar Factory . .	Sarv Shri S. K. Jain; J. P. Saxena; D. R. Parashar, Superintending Technologist; L. L. Chowdhary; Sita Ram; R. L. Khanna.
3.	Bihta Factory . . .	Sarv Shri Parmanand, Director; K. K. Dhir, Manager & Chief Engineer; R. C. Sharma, Cane Manager.

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4.	Warisaliganj Factory . .	Sarv Shri O. P. Verma, Head, Sugar Administration; I. R. Shashtri, General Manager; N. C. Galav, Chief Engineer; Ram Singh, Cane Manager.
5.	Guraru Factory	Sarv Shri S. N. Lal, Special Officer; R. K. Pandey, Chief Engineer; S. N. Singh, Cane Manager.
5.	**WEST UTTAR PRADESH**	*6th October*, 1963 to *11th October*, 1963
1.	U. P. Government . . .	Shri S. N. Acharya, Dy. Secretary (Industries Deptt.). *Cane Department.*—Sarv Shri B. R. Chaturvedi, Dy. Cane Commissioner; C. B. Singh, R.C.O. (Bareilly); S. C. Gupta, R.C.O. (Rampur); K. K. Soni, R. C. O. (Moradabad); Karan Singh, D.C.O. (Saharanpur), B. R. Sera, S.C.D.I. (Meerut); Madho Ram, Sugarcane Inspector (Bareilly); Man Singh, Sugarcane Inspector (Saharanpur).
2.	Bareilly Factory . . .	Sarv Shri M. B. Lal, Manager; L. F. Keshwani, Chief Chemist, U. B. Mull, Chief Engineer.
3.	Hargaon Factory . . .	Shri S. P. Agrawal, Asstt. Secretary
4.	Aira Factory	Shri M. M. Chhajer, Chief Chemist.
5.	Maholi Factory . . .	Shri S. L. Gupta, Technical Adviser.
6.	Rosa Factory	Shri Hazari Singh, Chief Engineer.
7.	Hardoi Factory . . .	Sarv Shri A. L. Bhati, Factory Manager & Chief Engineer; J. N. Tandon, Cane Manager.
8.	Gola Factory	Shri R. P. Nevatia, Chief Executive.
9.	Baheri Factory . . .	Shri N. P. Mathur, Manager.
10.	Bazpur Factory . . .	Sarv Shri A. H. Khan, General Manager; M. C. Gurha, Dy. General Manager (Cane); J. R Dargan, Chief Engineer.
11.	Pilibhit Factory . . .	Sarv Shri Ram Nath, Director; V. Chandra, Executive; L. S. Sengar, Superintending Chemist; P. D. Daga, Chief Engineer.
12.	Kashipur Factory . . .	Sarv Shri T. N. Shrivastava, Superintending Chemist; H. S. Tandon, Chief Engineer.
13.	Rampur Factory (Raza & Buland)	Sarv Shri N. H. Dalmia, Director; Bhimsen, Chief Ex. Officer; J. D. Taneja, Chief Chemist; H. R. Das Gupta, Chief Engineer, S. C. Jolly, Research Officer; H. N. Agrawal; J. P. Chaturvedi.
14.	Seohara Factory . . .	Sarv Shri H. N. S. Awasthi, Chief Chemist; H. C. Arora, Chief Engineer.
15.	Neoli Factory . . .	Shri B. R. Dubey, General Manager.
16.	Raja-ka-Sahaspur Factory .	Sarv Shri Lajpat Rai, General Manager R. C. Khanna, Chief Chemist; H. L. Kumar. Chief Engineer.
17.	Dhampur Factory . . .	Shri B. L. Mittal, Chief Chemist.

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18.	Amroha Factory	Sarv Shri Ranvir Singh, General Manager; D. P. Shrivastava, Chief Chemist; Inder Singh Chief Engineer; B. N. Rastogi, Development Officer.
19	Shamli Factory	Sarv Shri R. C. Malhotra, General Manager; D. P. Sanjana, Chief Chemist; K. L. Mehta, Chief Engineer.
20.	Rohanakalan Factory	Sarv Shri Shyam Singh, Managing Agent; H. S. Gautam, Chief Chemist.
21.	Lhaksar Factory	Sarv Shri Lakhmir Singh, Chief Chemist; Daya Singh, Chief Engineer; Shyam Lal, Cane Manager.
22.	Saharanpur Factory	Sarv Shri R. C. Bindal, Director; Mahinder Singh, Factory Manager; S. D. Sharma, Asstt. Factory Manager; Jagtar Singh, Chief Chemist; Dayal Das, Cane Manager; A. R. Goel, Chief Accountant.
23.	Sarsawa Factory	Sarv Shri N. B. Lal, General Manager; D. P. Gupta, Dy. General Manager; O. P. Bhatia, Chief Chemist.
24.	Doiwala Factory	Sarv Shri Ganesh Prasad, Director; Y. P. Kapil, Chief Chemist; J. D. Goel, Cane Manager.
25.	Iqbalpur Factory	Sarv Shri B. Miller, Superintending Engineer; R. C. Kohli, Chief Engineer; C. B. Singh.
26.	Bagpat Factory	Sarv Shri B. B. Mathur, General Manager; C. B. Agnihotri, Dy. General Manager; H.C. Singh, Chief Chemist.
27.	Panninagar Factory	Sarv Shri D. N. Shrivastava, Chief Chemist Atma Singh, Chief Engineer; K. N. Mall, Cane Manager.
28.	Simbhaoli Factory	Sarv Shri K. S. Gill, Administrative Officer; Gautam Bakshi, Chief Chemist.
29.	Mansurpur Factory	Sarv Shri H. R. Swarup, Managing Agent; Dhruva Prasad, General Manager; M. M. Sawhney, Chief Chemist, P. D. Khan, Chief Engineer.
30.	Khatauli Factory	Sarv Shri B. Miller, Superintending Engineer; P. L. Sawhney, Assistant Manager; V. S. Joneja, Chief Engineer.
31.	Daurala Factory	Sarv Shri R. Sahai, General Manager; Man Mohan, Additional General Manager.
32.	Mawana Factory	Shri H. A. Shah, Chief Chemist.
33.	Sakhotitanda Factory	Shri H. R. Virmani, Managing Agent.
34.	Meerut Factory	Sarv Shri B. D. Gupta, Managing Director; S. L. Lumba, Cane Manager.
35.	Modinagar Factory	Sarv Shri G. M. Modi, Chairman, Modi Industries; M. L. Modi, General Manager; D. R. Narula, Chief Chemist; S. R. Gupta, Secretary.

सत्यमेव जयते

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36.	Mohiuddinpur Factory . .	Sarv Shri M. Gupta, Partener; S.P. Varma, General Manager.
37.	Indian Sugar Mills Association .	Sarv Shri G. M. Modi, President; B. P. Jain, Secretary, West U.P. Branch.
6.	**MADRAS** **&**	*30th March*, 1964 to
7.	**PONDICHERRY**	*2nd April*, 1964
1.	Madras Government . . .	Dr. S. Krishnamurthi, Director of Agriculture; Sarv Shri S. Vishwanathan, Secretary (Deptt. of Food & Agriculture); T. N. Lakshminarayan, Secretary, Industrial Labour Corporation; T. R. Krishnamurthi, Joint Director (Industries); G. N. Das, Jt. Registrar, Coop. Societies; P. K. Balkrishnan, Deputy Chief Engineer (Irrigation); G. Kamalaratnam, Asstt. Commissioner (Labour Deptt.); N. Ganeshmurthi, Sugarcane Development Officer; Smt. R. Padmavati, Statistical Officer (Deptt. of Statistics).
2.	K.C.P. Ltd., Madras . . .	Shri Ram Krishna, Chairman.
3	E.I.D.—Parry Ltd., Madras .	Sarv Shri J. S. Prabhu, Special Director; R. Mainprice, Manager; S. Jayaram, Group Cane Superintendent; K. C. Aitkens, General Manager (Nellikuppam Factory).
4.	Madurantakam Factory . .	Sarv Shri N. P. Krishnaswamy, President; M. Moosa, Business Manager; J. R. Subbarao, Chief Engineer; C. R. Thiruvengadam, Cane Development Officer; K. R. Ramaiah, Chief Chemist.
5.	Amravathi Factory . . .	Sarv Shri M. Subramaniam, Business Manager; A. P. Chinnaswamy, Chief Chemist.
6	Ambur Factory . . .	Sarv Shri M. L. Verghese, Business Manager; R. C. Misra, Chief Engineer.
7.	Lalgudi Factory . . .	Sarv Shri P. N. Talati, Chief Administrative Officer; J. T. Thakkar, Asstt. Manager.
8.	Vadapathimangalam Factory .	Sarv Shri S. V. Parthasarathy, Chief Sugarcane Officer; K. G. Thiagarajan, Secretary to Chairman.
9.	Pandiarajapuram Factory . .	Sarv Shri T. Manickavasagam, Managing Director; L. Muthiah, Manager.
10.	Pondicherry Factory . . .	Sarv Shri V. D. Hindocha, Director; N. V. R. Rao, Plantation Manager; P. N. Kalekar, Asstt. Manager; S. T. Anjal, Dy. Chief Chemist.
8.	**MYSORE**	*3rd April*, 1964 to *5th April*, 1964
1.	Mysore Government . .	Sarv Shri M. Vasudeva Rao, Development Commissioner (Co-op. Sugar Factories); C.A. Jamakhandimath, Joint Registrar,

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		Co-op. Societies; H. R. Arakeri, Joint Director (Agriculture Deptt.); S. V. Prabhu, Under Secretary (Commerce & Industry Deptt); M. A. Khan, Dy. Labour Commissioner; H. G. Gopaliajur, Asstt. Labour Commissioner; G. Varadegowda, Asstt. Director (Industries & Commerce Directorate); N. Desika Char, Dy. Chief Engineer (C&B); B. Sadakshriah, Dy. Chief Engineer (GL); S. C. Patil, Sugarcane Development Officer.
2.	Mandya Factory	Sarv Shri V. Venugopal Naidu, Chairman & Mg. Director; B. G. Dasegowda, General Manager; T. Hanumaiah, Secretary; K. B. N. Sastry, Production Manager; N. Thimmareddy, Cane Superintendent; G. P. Vishweswaraiah, Farm Superintendent; C. Subramaniam, Accounts Manager.
3.	Ugar Factory	Shri S. S. Shirgaokar, Manging Agent.
4.	Munirabad Factory	Shri S. R. Banka, Secretary.
5.	Hospet Factory	Shri D. V. Krishnamurthy, Manager.
6.	Shimoga Factory	Sarv Shri J. G. Ruybadnce, Managing Director; J. G. Reyvadera, Director; K. G. Hathi, Manager.
7.	Krishna Kittur Factory	Sarv Shri N. R. Karwa, Director; V. N. Mysore, Legal Adviser.
8.	Kampli Factory	Sarv Shri H. Lingareddi, Chairman; A. Kaibuble, Director; A. R. Yathiraja, Chief Chemist.
9.	Pandavapura Factory	Sarv Shri B. Y. Neele Gowda, Chairman; K. R. Sanyasiraju, General Manager; K. G. Krishne Gowda, Chief Chemist; B. Boriah, Chief Engineer; D. P. Lakshminarasinhiya, Cane Superintendent; G. Narayana Murthy, Chief Accountant.
10.	Sankeshwar Factory	Sarv Shri S. I. Patil, Chairman; S. M. Wali, Managing Director; H. G. Kulkarni, Chief Chemist; B. L. Patil, Agricultural Officer.
11.	General Interests	Dr. R. Nagan Gowda, Sugarcane Grower, Hospet.
9.	**MADHYA PRADESH**	*19th August*, 1964 to *22nd August*, 1964
1.	M. P. Government	Sarv Shri Y. Rama Rao, Jt. Director of Agriculture & Additional Cane Commissioner; T. S. Gill, Director of Agriculture; G. K. Seth, Additional Director of Industries; L. N. Puranik, Dy. Labour Commissioner; C. S. Srinivasan, Asstt. Director of Agriculture (Cane); K. C. Kanungo, Asstt. Director (Industries Deptt.); D. Pandey, Asstt. Director (Industries Deptt.), J. P. Tyagi, Dy. Director (Industries Deptt.); S. A. Sharma, Superintending Engineer

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		(Planning Deptt.); J. T. Dikey, Superintending Engineer (Irrigation Deptt.); K. B. Balgopal, Executive Engineer (Irrigation Deptt.); S. R. Bhargava, Sr. Research Officer (Directorate of Economics & Statistics).
2	Sehore Factory	Sarv Shri J. J. Mulji, Director; D. V. Vartak, General Manager; S. A. Paranjape, Chief Chemist; B. D. Shukla, Chief Engineer. T. B. Ravikar, Estate Manager.
3.	Dabra Factory . . .	Sarv Shri B. K. Seksena, Officer on Special Duty; Y. Bahadur, Executive Officer; P. J. Kuruila, Cane Manager.
4.	Dalauda Factory . . .	Sarv Shri K. K. Topa, Secretary; V. S. Kantak, Chief Chemist.
5.	Jaora & Mehidpur Road Factories	Sarv Shri B. N. Tody, Managing Director; V. N. Tody, Director; H. N. Manjaiah, General Manager, S. K. Jalan, Manager (Jaora); A. L. Bhalla, Chief Chemist (Jaora); V. Prasad, Chief Engineer (Mehidpur Road
6.	Indian Sugar Mills Association .	Shri B. N. Jain, Secretary, M. P. Branch.
10.	**MAHARASHTRA**	*6th September*, 1964 to *8th September*, 1964
1.	Maharashtra Govt. . . .	Dr. V. V. Kale, Dy. Director of Industries (Chem.); Sarv Shri G. M. Ranade, Dy. Secretary (Building & Communication Deptt.); S. P. Gothoskar, Jt. Director (Bureau of Economics & Statistics); V. G. Vaidya, Additional Director of Agriculture; N. C. Khursale, Chief Engineer (Irrigation); A. W. Khan, Jt. Registrar, Coop-Societies (Sugar); Dr. D. G. Dakshin Das, Chief Sugarcane Development Officer (Deptt. of Agriculture); Sarv Shri U. K. Kanitkar, Sugarcane Specialist (Deptt. of Agriculture); J. D. Joshi, Dy. Director of Industries (Poona); Km. G. M. Vakil, Govt. Labour Officer (Poona).
2.	Maharashtra Rajya Sahakari Sakhar Karkhana Sangh Ltd.	Sarv Shri Vasantrao Patil, Chairman; N. D Karnick, Managing Director.
3.	Saswadmali Factory . . .	Sarv Shri B. M. Jadhav, Chairman; K. L. Girme, Vice Chairman; P. H. Girme, Director K. N. Mukherjee, Chief Chemist; P. M. Govitrikar, Estate Manager.
4.	Shreepur Factory . . .	Sarv Shri S. L. Limaye, Chairman; G. S. Valimbi, Manager.
5.	Phaltan (Sakharwadi) Factory .	Sarv Shri M. L. Apte, Director; K. G. Apte, General Manager; S. N. Deshmukh, Chief Chemist, G. K. Joshi Chief Engineer; S. B. Sathe, Accountant.
6.	Changdeonagar Factory . .	Sarv Shri J. J. Mulji; D. V. Vartak, General Manager.

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7.	Belvandi Factory	Sarv Shri D. M. Dahanukar, Director; P. S Natekar, Asstt. Manager; K. K. Ashar Adviser; S. R. Sukthankar, Accountant.
8.	Belapur & Gangapur Factories	Shri J. D. Kapadia, Senior Executive.
9.	Ravalgaon Factory	Shri S. K. Mukherjee, Chief Engineer.
10.	Walchandnagar Factory	Sarv Shri J. A. Gumaste, Principal Officer I.C. Badhwar, Chief Chemist.
11.	Kolhapur Factory	Shri G. N. Bansal, Chief Engineer.
12.	Sakarwadi & Lakshmiwadi Factories.	Sarv Shri S. K. Somaiya, Director; D. M. Popat, Director; P. M. Kavadia, Executive; J. S. Huja, General Manager.
13.	Ichalkaranji Factory	Sarv Shri N. B. Patil, Director; D. H. Manere, Director.
14.	Pravaranagar Factory	Sarv Shri C. B. Ghogare Patil, Vice Chairman; R. B. Patil Kharde, Director; D. R. Patil, Chief Accountant.
15.	Kopergaon Factory	Sarv Shri K. B. Jitkar, Managing Director; R. D. Kulkarni, Chief Accountant; S. B. Changule, Cane Development Officer.
16.	Bhogawati Factory	Shri R. H. Deshpande, Managing Director.
17.	Nira Factory	Sarv Shri M. S. Kakde, Chairman; S.P. Mishra, Chief Chemist.
18.	Rahuri Factory	Shri P. W. Pawaiaz, Managing Director.
19.	Malegaon Factory	Shri M. S. Bhalerao, Office Superintendent.
20.	Ashoknagar Factory	Shri K. B. Dandge, Managing Director.
21.	Kumbhi-Kesari Factory	Shri B. G. Dalin, Senior Chemist.
11.	**GUJARAT**	*10th September*, 1964
1.	Gujarat Government	Sarv Shri H. M. Joshi, Registrar, Co-op. Societies; G. C. Dixit, Deputy Registrar, Co-op. Societies; N. M. Soparkar, Dy. Director of Industries; V. I. Carpenter, Under Secretary (Public Works Deptt.); D. R. Shankara Iyer, Under Secretary (Irrigation Deptt.); V. T. Motwani, Sugarcane Specialist (Agriculture Deptt.); V. M. Patil, Research Officer (Economics & Statistics Deptt.).
2.	Bardoli Factory	Dr. D. K. Patel, Managing Director, Shri B. H. Hoshing, Chief Chemist.
3.	Kodinar Factory	Sarv Shri P. P. Shah, Managing Director; A. B. Dodia, Vice Chairman.
4.	Gandevi Factory	Sarv Shri L. D. Naik, Chairman; K. D. Pathak, Managing Director.
5.	Bhavnagar Factory	Shri Kantilal, Director.

सत्यमेव जयते

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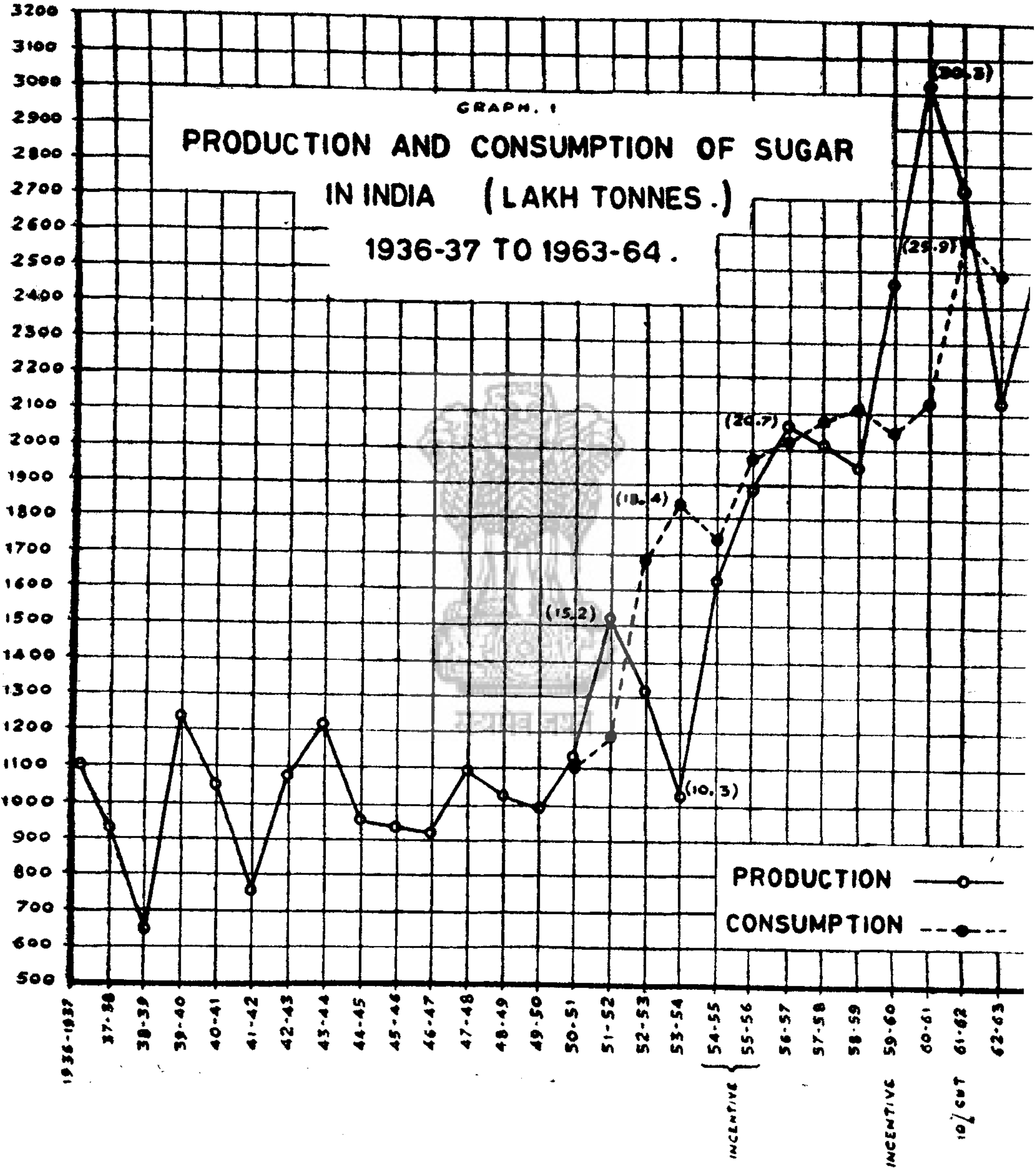
12.	**RAJASTHAN**	*11th September*, 1964
1.	Rajasthan Government	Sarv Shri R. R. Purohit, Joint Director (Industries); J. C. Kale, Director of Agriculture; L. K. Varma, Director (Directorate of Economics & Statistics); B. R. Vyas, Dy. Registrar (Coop. Societies); H. C. Kothari, Dy. Director (Agriculture Deptt.); J. C. Kanjohi, Ex. Engineer (Irrigation).
2.	Sriganganagar Factory	Sarv Shri K. S. Rajgopal, Secretary; Achal Singh , General Manager; V. M. Gadgil, Sugar Technologist.
3.	Bhupalsagar Factory	Sarv Shri D. P. Parik, Secretary; K. B. Varma, Chief Engineer; R. N. Singh, Cane Manager.
13.	**ANDHRA PRADESH**	*17th November*, 1964 to *18th November*, 1964
1.	Andhra Government	Sarv Shri D. K. Brahma, Technical Office- (Co-operative Sugar Factories); R. K. Veha, Dy. Secretary (Industries Deptt.); B. P. Reddy, Director (Industries & Commerce); G. K Reddy, Chief Engineer (P.W.D.); P. T. M. Reddy, Chief Engineer (Irrigation); B. J. Rao, Dy. Cane Commissioner; V. R. Rao, Dy. Director (Bureau of Eco. & Stat.); M. N. Rao, Asstt. Director (Bureau of Eco. & Stat.); S. P. Balsubramaniam, Special Officer, Co-op. Sugar Factories.
2.	Vuyyuru Factory	Sarv Shri Ram Krishna. Chairman; M. S. Rao, Secretary.
3.	Pithapuram Factory	Sarv Shri G. Bapineedu, Works Manager; R. Vishwanathan.
4.	Shakarnagar Factory	Shri M. R. Pai, Managing Director.
5.	Bobbili & Seethanagaram Factories	Shri R. V. Ramnamurthy, Chief Chemist
6.	Chagallu Factory	Shri G. Ram Chander.
7.	Samalkot Factory	Shri S. P. Varma.
8.	Tuni Factory	Sarv Shri S. Parandhwa Rao; S. R. C. Sitharamanmurthy.
9.	Etikoppaka Factory	Sarv Shri C. S. Raju, Secretary; M. S. Ramachandra Murthy, Chief Chemist.
10.	Chittoor Factory	Shri S. G. Chinnaswamy, President.
11.	Palakol & Amadalavalasa Factories.	Shri C. B. Ram, Officer-in-Charge.
12.	Chodavaram Factory	Shri Satya Narain, President.
14.	**ASSAM**	*18th February*, 1965
1.	Baruabamungaon Factory	Shri P. Sen, Managing Director.

1	2	3
15.	**ORISSA**	*18th February*, 1965
1.	Rayagada Factory . . .	Shri G. Ram Chandran, Chief Chemist.
16.	**WEST BENGAL**	*24th February*, 1965
1.	West Bengal Govt. . . .	Shri S. C. Roy, Additional Director of Agriculture.
2.	Plassey Factory . . .	Sarv Shri V. N. Kedia, Executive; M. M. Mazumdar, General Manager.



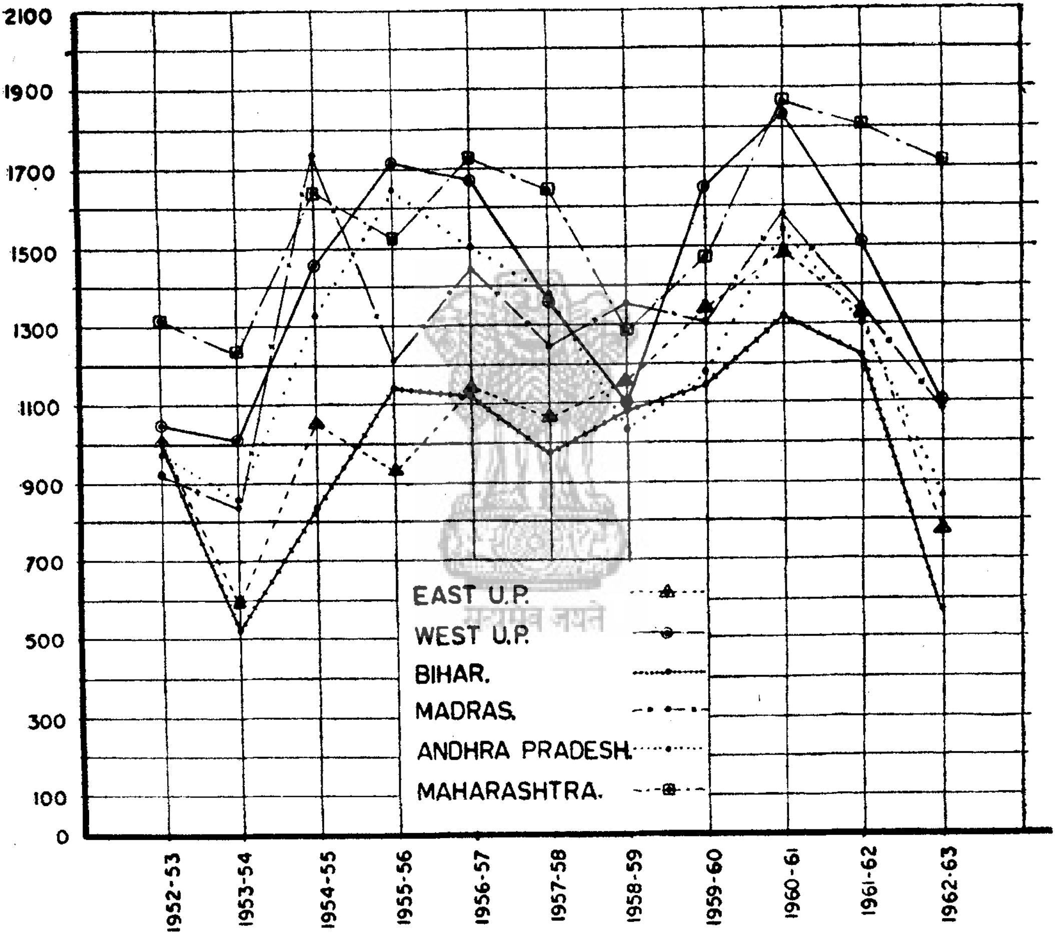
GRAPH. 1

PRODUCTION AND CONSUMPTION OF SUGAR IN INDIA (LAKH TONNES.) 1936-37 TO 1963-64.

सत्यमेव जयते

GRAPH - 2

SUGAR PRODUCED PER 100 TONNES OF INSTALLED CAPACITY.



REPORT OF THE COMMITTEE
ON
REHABILITATION AND MODERNISATION
OF
SUGAR FACTORIES IN INDIA

(1965)

PART II

(Detailed Report of Individual States)

PUNJAB

1. GENERAL ASPECTS

1.1 The Punjab State has at present seven working factories situated in 6 districts, *viz.*, Ambala, Kapurthala, Sangrur, Karnal, Jullundur and Rohtak. The State lies between longitudes 75° to 78° and latitudes 30° to 35° and thus falls in the temperate zone. Rainfall in the region is on an average 75 to 80 cms. confined within the months of July to September. There is also some winter rain during December and January. Climate is rather extreme, temperature reaching a maximum of about 50°C in summer and below freezing point during winter in some parts of the State.

The soils of the Punjab plains belong to the same class of alluvial soil typical of the Indo-Gangetic plains. Majority of them are loamy and sandy loam consisting of a soil crust of varying depth.

Frost is a recurring phenomenon and can be very injurious if severe and accompanied by rain or if cold winds blow at the time.

The State is divided into three main sugarcane growing tracts, *viz.*,

(a) Sub-montane tract—comprising districts of Gurdaspur, Hoshiarpur and Ambala (Yamunanagar and Morinda factories are situated in Ambala district). The tract in general is characterised by a comparatively heavier rainfall (75 cms—100 cms), conditions of higher humidity and greater incidence and intensity of frost. The soil varies from medium loam to good loam of average fertility. The water table varies from 2 ft.--15 ft.

(b) The Central tract—comprising districts of Ludhiana, Jullundur, Kapurthala, Amritsar, Patiala, Ferozepore and Sangrur. (Phagwara is in Kapurthala district, Bhogpur factory is in Jullundur district and Dhuri in Sangrur district). The average rainfall varies from 50—75 cms. Soils are generally loamy and extremely fertile. Drainage is a problem and successful cane cultivation depends on effective control with respect to drainage. The water table, however, is rarely as high as in sub-montane tract.

(c) South Eastern tract—comprising districts of Hissar, Gurgaon, Rohtak and Karnal. (Rohtak factory is in Rohtak District and Panipat factory is in Karnal district). These districts belong to Western Gangetic Plain with a mean rainfall of 65 cms. Heat is less intense than in the central districts, but hot winds are of common occurrence. Soils consist mostly of loams. Frost is not as common here as in the other tracts. Water table generally varies from 10–22 ft. save in Panipat tehsil where it is much higher varying from 5–12 ft.

1.2 Area, density of population, size of holdings, agricultural and industrial employment and economic condition of people

The total area of the State is 1,22,518 sq. kilometres and the density of population is 168 per sq. kilometre. The main occupation is agriculture, about 64 per cent of the total population being engaged in agriculture. Percentage of workers to total population is about 35.0, of industrial workers to the total workers 12.6 and of workers in sugar industry to the total industrial workers 1.55. Per capita income (1961) is 451.31 at current prices.

1.3 Importance of sugarcane crop

Sugarcane has been grown in this region for centuries. This crop more than any other, withstands the hazards of weather and natural calamities to which the State is prone. The cane crop meets the requirement of fodder for the cattle also and its cultivation does not interfere with any other staple food crop.

The area under cane in the factory areas of this State has increased in the last four years from 126.7 thousand acres to 171.0 thousand acres in 1961-62. It is roughly 2.9 per cent of the area under cane in the whole of India. The total cane area of the State is about 11.0 per cent of the all India's cane area.

Of the total cane production in the State roughly 12 per cent is utilised for white sugar manufacture.

1.4 Establishment and growth of the sugar industry in Punjab

Before independence there were only three factories. In 1956-57 three new co-operative factories were established. The fourth co-operative factory was established in the year 1962-63. Two more co-operative sugar factories are under erection.

1.5 Distribution of sugar factories in Punjab

The distribution of the seven factories working at present in the various districts of Punjab and their existing daily cane crushing capacities are as follows :—

Sl. No.	Name of the District	Name of Factory	Existing daily cane crushing capacity in tonnes/day 1963-64 season
1.	Ambala	Morinda	1270
		Yamunanagar	3302
2.	Kapurthala	Phagwara	863
3.	Sangrur	Dhuri	1016
4.	Karnal	Panipat	1270
5.	Jullundur	Bhogpur	1016
6.	Rohtak	Rohtak	1016

1.6 System of cane development and marketing

The Cane Commissioner is overall incharge of development and marketing of sugarcane. On the development side, he is assisted by three Assistant Cane Development Officers with headquarters at Chandigarh, Yamunanagar and Bhogpur, 36 Cane Development Inspectors, 96 Cane Development Sub-inspectors and 213 Beldars who are posted in the sugar factory areas in the State.

On the marketing side, the Cane Commissioner is assisted by the Assistant Cane Commissioner, one Co-operative Inspector and 10 Cane Inspectors. One Cane Inspector is posted at Chandigarh and the rest are posted in the field (one for each sugar factory).

No Cane Development Councils exist in factory zones. There is however a Sugarcane Control Board which is responsible for development work in the State, including selection of varieties etc.

Following campaigns and development schemes pertaining to cane are reported to be in hand during the Third Plan period with financial allocations as shown :

	Total cost Rs. lacs
(*a*) Sugarcane Development Scheme	40·00
(*b*) Scheme for construction of roads around sugar factory areas	60·00
(*c*) Intensive Development Scheme for Sugarcane . .	9·80
(*d*) Pilot Project Scheme of Sugarcane	11·37

Besides these, intensive development schemes on 1/3rd contribution basis from the Central Government, State Government and the beneficiaries are being taken up. Under the development schemes, loan facilities are available to the growers for minor irrigation schemes. For improved agricultural implements and plant protection etc., the Government gives subsidies also. For improving the communications and construction of *pucca* roads in factory areas contributory road building schemes are in operation under which 1/3rd cost is met each by the Central Government, State Government and the factories and growers.

The Federation of Co-operative Societies is the sole agent for distribution of fertilisers through the District Wholesale Societies. These societies collect the demands from all the marketing societies in each district. There are about 2,500 village depots under these marketing societies. Marketing of cane is being done by the Cane Co-operative Societies in the factory zones.

1.7 Amount of purchase tax collected and spent on cane development

Year	Total purchase tax collected during the year (Rs.)	Expenditure incurred on Cane Development Schemes (Rs.)	Purchase tax spent % collected
1955-56	379,108	134,176	35·4
1956-57	737,105	161,621	21·9
1957-58	824,177	208,573	25·3
1958-59	1,043,042	222,527	21·3
1959-60	1,274,980	216,171	16·9
1960-61	1,420,674	238,756	16·8
1961-62	4,769,497	257,418	5·4
1962-63	2,633,980	304,387	11·6
TOTAL	13,082,563	1,743,529	13·3

It will be seen from the above that the amount of expenditure on cane development is 2-3 lacs every year which is grossly inadequate. It amounts on an average, to about 13 per cent only of the revenue received from purchase tax.

2. TECHNICAL ASPECTS

2.1 Area under cane and estimated yield per acre

Till 1963 there had been no well defined areas reserved for sugar factories in Punjab. The areas from which the factories used to draw cane have been changing from year to year depending upon the requirements of the factories. On account of this, the factories have not taken much interest in developing the cane areas. It is only now that the Government has thought of reserving an area of 10 miles radius permanently for the 1,000–1,200 tonnes factories and 17.5 miles radius for the Yamunanagar factory.

The position with respect to area under cane is given in Table I-A and estimated yield per acre in Table I-B.

Out of seven factories only six factories have supplied the information. It will be seen from the figures of six factories given in these tables that (i) the area under cane has shown considerable fluctuations in the last four years varying (for six factories) from about 126.7 to 171.0 thousand acres (ii) the average yield of cane per acre for the whole State is 13–15 tonnes and that in Development Zones 16–19 tonnes.

2.2 Cane supplies to sugar mills

The percentage of cane utilised for white sugar manufacture is shown in Table I-C, the actual supplies made to factories in Table I-D and the percentage of supplies at the gate, road and rail centres in Table I-E.

It well be seen from table I-C that average supplies of cane to sugar mills in the State have generally varied from 36.8 to 62.2 per cent of the total cane produced in the assigned areas. In the year of high production *viz.*, 1960-61 and 1961-62, the supplies to the sugar mills in the State varied from 46 to 61 per cent. In the year 1962-63, which is the year of high *gur* price, supplies dwindled to about 36.8 per cent. Supplies of almost all factories were adversely affected in 1962-63 with corresponding increase for *gur* manufacture. Table I-D will show that the total cane supplied to six factories has varied from 692.4 thousand tonnes to 1370.7 thousand tonnes, being the highest in the year 1960-61 (Morinda factory has not supplied the data). The supplies were the lowest in 1962-63 due to reduction in acreage on account of 10 per cent cut imposed on production by the Government in view of the surplus sugar position then obtaining and diversion of cane for *gur* manufacture.

It will be seen from Table I-E that rail centres exist in four factories out of which 6 have supplied data. Rohtak and Panipat factories have no rail cane. Phagwara and Dhuri have about 8 per cent of rail cane, while Yamunanagar has about 12 per cent. The Bhogpur factory has, however, a very large proportion of rail cane *viz.*, 44 per cent. With intensive development of cane cultivation, it should be possible to increase gate supplies and reduce the rail and long distance road centres, thus ensuring fresher supplies at minimum transport cost.

2.3 Irrigation, application of manures and fertilizers and supply of seed

The existing position in the various factories of the Punjab State in respect of irrigation, supply of manures and fertilizers, supply of seed and the estimated requirements in respect of these items are given in Tables II-A, II-B and II-C respectively.

The actual requirements in respect of each item of development for obtaining proper yields and supplies of cane are also indicated in Tables II-A, II-B and II-C.

It will be seen from Table II-A that the area irrigated to total culturable area in the assigned zones of Punjab factories is only 39 per cent which is quite inadequate.

It will be seen that sugar factories in Punjab State still require nearly 1,400 state tubewells, about 1,020 private tubewells, 500 masonry wells and about 700 pumping sets (in respect of five factories only). The cost of constructing 1,400 state tubewells will be about 11.2 crores @ Rs. 80,000 per tubewell.

Table II-B shows the position with regard to requirement of manures and fertilizers for the existing acreage under cane.

It will be seen that the total requirement for chemical fertilizers works out to 19,000 tonnes, for cake and sterameal to 6,000 tonnes and for green manure seed to 1,500 tonnes. Complete information as to what proportion of these requirements are being met has not been made available to the Committee.

Table II-C shows the requirement of seed. It will be seen that actual requirement of seed for six factories is 2,10,662 tonnes. It appears out of this only 34,344 tonnes is being met by the cane societies. The balance of 1,76,318 tonnes of seed is met by the growers themselves.

2.4 Means of communications

Table II-D shows the position with regard to the means of communications at present available in respect of *pucca* roads. Further requirements in respect of *pucca* roads, bridges and culverts are also shown.

It will be seen that cane supplying areas are not very well connected with sugar factories by *pucca* roads and link roads are fewer still. This will be clear from the fact that only 617 Kms. roads exist in the seven factory areas, which are mostly main roads of the P.W.D. Minimum additional requirement of the factory areas is 417 Km. of roads. This is estimated to cost Rs. 2.29 crores at Rs. 55,000 per Km.

As regards bridges about 126 big bridges will be required and if the cost per bridge is estimated on an average at Rs. 50,000, the total cost will be Rs. 0.63 crores. Cost of 273 culverts at Rs. 3,000 each will come to Rs. 0.08 crores. Thus the total estimated cost of all the works will be Rs. 2.29 crores plus Rs. 0.63 crores plus Rs. 0.08 crores *i.e.* equal to Rs. 3.00 crores. (The above requirements have been worked out on the basis of demands communicated by the factories through the Cane Commissioner, Punjab).

2.5 The duration of season, cane crushed, sugar made and average recovery in Punjab factories

The position with respect to average duration of season, cane crushed, sugar produced and recovery recorded by Punjab factories during the preceding ten years is as follows :—

Year	Average duration days (22 hrs.)	Cane crushed (thousand tonnes)	Sugar made (thousand tonnes)	Average recovery per cent cane
1953-54	92	284·6	26·8	9·42
1954-55	168	325·9	29·2	8·96
1955-56	109	428·1	38·4	8·97
1956-57	90	650·1	58·7	9·02
1957-58	123	888·1	83·7	9·42
1958-59	112	817·2	70·1	8·58
1959-60	141	1118·2	102·3	9·14
1960-61	165	1371·7	122·5	8·93
1961-62	133	1101·1	90·6	8·23
1962-63	82	696·2	62·4	8·97

It will be seen that the maximum production of sugar in the State has been of the order of 122.5 thousand tonnes and the maximum recovery has been 9.42.

The position with regard to the number of working factories in Punjab, their registered capacity, production of sugar in tonnes, and sugar produced per 100 tonnes of registered capacity is shown below :

Year	No. of working factories	Total registered cane crushing capacity per day in tonnes	Production of sugar in tonnes	Production of sugar per 100 tonnes registered capacity (tonnes)
1950-51	3	3,708	20,830	561·7
1951-52	3	3,708	48,802	1316·1
1952-53	3	3,708	31,644	853·4
1953-54	3	3,708	26,812	723·1
1954-55	2	1,880	29,203	1,553·3
1955-56	4	3,708	38,411	1,035·9
1956-57	7	7,010	58,657	836·8
1957-58	6	6,198	83,656	1,349·7
1958-59	6	6,198	70,133	1,131·5
1959-60	6	8,484	102,256	1,205·3
1960-61	6	8,484	122,467	1,443·5
1961-62	6	8,484	90,592	1,067·8
1962-63	7	9,754	62,444	640·2

सत्यमेव जयते

The maximum production per 100 tonnes of registered capacity was 1553.3 tonnes in 1954-55 which dwindled down to 640.2 tonnes in 1962-63.

The consumption of sugar in Punjab was about 181,000 tonnes in 1961-62. The State is thus deficit by about 59,000 tonnes.

2.6 The present age of the plants, their layout and condition of existing machinery

The following table gives the age of the various plants and their capacities :—

Name of factory	Year of establishment	Age in 1963 (Years)	Original capacity (tons/day)	Existing daily cane crushing capacity (licensed) (tonnes per day) 1963-64 season	Actual maximum crushing rate /24 hrs. operation attained in 1961-62 or 1962-63
1. Phagwara	1933	30	400	863	970
2. Dhuri*	1955	30	800	1,016	804
3. Rohtak	1956	7	1,000	1,016	1,239
4. Bhogpur	1955	8	1,000	1,016	1,155
5. Panipat	1957	6	1,250	1,270	1,287
6. Morinda	1962	1	1,250	1,270	615
7. Yamunanagar . . .	1933	30	400	3,302	3,383

*This is the old Japaha plant, which was established at Japaha (Bihar) in 1933. It was taken to Ranbirsinghpura in 1941 and again shifted from Ranbirsinghpura (Kashmir) to Dhuri in 1955.

Upto 1953-54 season a factory at Hamira was also working which has now been shifted to Iqbalpur in West U.P.

It will be seen that Phagwara, Dhuri and Yamunanagar are old plants while the rest four *i.e.,* Rohtak, Bhogpur, Panipat and Morinda are new plants. The distribution in the various capacity ranges is as follows :—

800 to 1000 tonnes	1
1001 to 1200 tonnes	3
1201 to 1500 tonnes	2
Above 1500 tonnes	1

सत्यमेव जयते

As regards the condition of machinery out of the seven factories, three are old factories and the remaining four (co-operative factories) were established only a few years back. Table III-A gives the important details of the milling plant. It will be seen from Table III-A, that Yamunanagar has a tandem of 21 rollers driven by 3 steam engines and the power for mill drive at Dhuri is inadequate.

Table III-B will show that out of 6 factories (which have supplied data), two are fully steam driven units and four have semi-electric drive. Except three factories which have boilers of 190–225 p.s.i. pressure, all have boilers of 160 p.s.i. pressure. Heat recovery units are generally lacking.

As regards the equipment in the boiling house Tables IIIC-i, ii, iii and iv will show that out of six factories, one still has manually operated weighing equipment. Only two factories have vapour line juice heaters, one factory still has triple effect evaporator and vapour bleeding is not a common feature, except three all the other factories still have coil pans to the extent of 18–25 per cent of the total pan capacity. Most of the centrifugal machines are ordinary ones of 30″×18″ or 36″×18″ size.

2.7 **Working results**

The data with respect to (i) cane quality, (ii) time account, (iii) recovery and total losses and (iv) fuel consumption are given in Tables IV-Ai, ii, iii, IV-Bi, ii, IV-Ci, ii, iii, IV-Di and ii.

It will be seen from Tables IV-Ai, ii and iii that the average seasonal pol per cent cane in the last four years has generally varied from 10.6 to 11.6 with primary juice purity variation from 78.5 to 80.0. Fibre per cent cane is in general around 14.5 to 16.5. The cane yield as well as quality are very poor.

Tables IV-Bi and ii show the time account. It will be seen that the duration of season in all factories in the year 1960-61 has been above 150 days. The number of hours lost to total available are quite high in all factories except Phagwara and Panipat. The normal time loss should not exceed 10–12 per cent, but it will be seen that in almost all factories except Phagwara and Panipat it is considerably above this figure. In Yamunanagar, it is of the order of 21.5 to 26.7 per cent.

Tables IV-Ci, ii and iii show the position of recovery, total losses and reduced overall extraction. It will be seen that all the factories have registered rather low recoveries ranging between 8.4 to 9.2 per cent cane due to poor quality of cane.

The reduced overall extraction has varied from 83.5 to 86.0. In most of the cases, it is above 84, which shows the factory efficiencies are quite good. It may be mentioned here that of the seven factories as much as 6 follow the carbonation process of clarification.

Tables IV-Di and ii show the position with regard to fuel consumption. It will be noted that except the Rohtak factory others are more or less self-sufficient in bagasse, the extra fuel consumption being small. However, with proper fuel economy measures these factories should be able to save considerable quantities of bagasse.

2.8 **Rehabilitation, modernisation and expansion envisaged**

Table V gives particulars of the capacity to which the factories can be extended as envisaged by the factories themselves and the approximate cost involved in rehabilitation and modernisation and/or expansion as estimated by the factories.

2.9 Labour strength and productivity

Table VI-A shows the labour strength actually employed in Punjab factories, the labour considered surplus even now and the labour that would become surplus when schemes of modernisation become effective.

It will be seen that at present there is no surplus labour in any factory. Only one factory estimates that 70 unskilled workers would be rendered surplus when it modernises. The Committee is of the view that problems of surplus labour will not arise, when the expansion accompanies modernisation. In factories which are recent and modern, the problems of surplus labour would be absent.

Table VI-B shows the productivity of each factory in terms of man days per tonne of sugar for four years. It will be seen that almost in all cases the productivity has been reasonable *viz.*, 8.5 to 12.0 except in the case of Bhogpur factory for the season 1962-63, where it is 17.6 which is on the low side.

2.10 Utilisation of by-products

Tables VII-A, VII-B and VII-C show the position with respect to utilisation of by-products.

It will be seen that molasses is almost entirely used for the production of industrial alcohol and is supplied by factories to distilleries at Government controlled price bringing no extra return to the sugar factories other than what has been already allowed in the fair ex-factory selling price of sugar.

All the factories except Morinda in Punjab are carbonation factories, the press mud of which has no utilisation and its disposal is a problem.

As regards bagasse, only four factories saved bagasse and sold it.

3. ECONOMIC ASPECTS

सत्यमेव जयते

3.1 Financial set-up

The nature of ownership, the share capital, the reserves and net worth of 6 Punjab sugar factories as given in their Balance Sheets for 1961-62 are as follows :—

(In lacs of Rupees)

Name of unit	Paid up capital			Reserves	Total net worth
	Original	Bonus issues	Total		
(1)	(2)	(3)	(4)	(5)	(6)
Public Limited					
1. Phagwara	11·09	..	11·09	39·87	50·96
2. Dhuri	10·32	17·33	27·65	1·17	28.82
Yamunanagar . . .	30·79	11·38	42·17	59·42	101·59
TOTAL	52·20	28·71	80·91	100·46	181·37

(1)	(2)	(3)	(4)	(5)	(6)
*Co-operatives**					
1. Rohtak	50·98	..	50·98	..	50·98
2. Bhogpur	50·35	..	50·35	0·12	50·47
3. Panipat	50·79	..	50·79	18·50	69·29
TOTAL	152·12	..	151·12	18·62	170·74
GRAND TOTAL . . .	204·32	28·71	233·03	119·08	352·11

*Morinda factory came into existence after 1961-62 and has therefore been excluded from this study.

It will be seen that out of the share capital of Rs. 2.33 crores, Rs. 0.29 crore has been subscribed as bonus shares, the remaining amount of Rs. 2.04 crores being the originally paid up capital. At the close of 1961-62, a sum of Rs. 1.19 crores was also available in reserves bringing the value of total net worth to Rs. 3.52 crores. Thus the profits so far retained by Punjab sugar industry in the form of bonus shares and reserves aggregate Rs. 1.48 crores which means an addition of 72.4 per cent to the initially paid up capital. The growth of sugar industry in this State is comparatively recent. Out of the 6 factories working in 1961-62, three factories *viz.*, Panipat, Bhogpur and Rohtak were established in 1956-57 and one at Dhuri in 1955-56. The profits retained by the two old factories of Yamunanagar and Phagwara in the form of reserves and bonus shares calculate to 264.4 per cent of their initially paid up capital which appears to be quite satisfactory.

Financial analysis* has been made by this Committee for the years 1953-54, 1957-58 and 1961-62, on the basis of Balance Sheets received from sugar factories and the results are shown below :—

(Amounts in lacs of Rupees)

Particulars	1953-54	1957-58	1961-62	Comparative development in	
				1957-58 over 1953-54	1961-62 over 1957-58
1	2	3	4	5	6
1. No. of units . . .	2**	6	6	4	..
2. Gross block . . .	114·28	593·22	721·73	+478·94	+128·51
3. Accumulated depreciation .	58·04	121·76	307·64	+63·72	+185·88
4. Net block . . .	56·24	471·46	414·09	+415·22	—57·37
5. Net worth . . .	76·11	276·43	352·11	+200·32	+75·68
6. Surplus of net worth over net block . . .	19·87	—195·03	—61·98	—214·90	+133·05
7. Debentures & long term loans	..	172·00	129·30	+172·00	+42·70
8. Available resources . .	19·87	—23·03	67·32	—42·90	+90·35
9. Investment . . .	39·47	35·70	34·30	—3·77	—1·40
10. Investment as % of surplus net worth . . .	198·6	..	..	..	..
11. Net block as % gross block	49·2	79·5	57·4	+30·3	—22·1

*Similar to the analysis made by the Tariff Commission in paragraph 15·5 of their report on the cost structure of sugar (1959) for the years 1953-54 and 1957-58.

**Excludes Hamira factory for which Balance Sheets are not available.

It will be seen that at the close of 1961-62, as against Rs. 4.14 crores net block, the net worth of the industry was Rs. 3.52 crores only. A sum of Rs. 1.29 crores stood outstanding against the industry in the form of long term loans and debentures. The industry also invested a sum of Rs. 0.34 crore in the form of shares and debentures of other companies and in Government securities.

These figures are also indicative of the development that has taken place during the last eight years. Four new units were set up during the period of 4 years ending 1957-58, three of them in the cooperative sector through heavy long term borrowing. The gross investment in the first period of 4 years ending 1957-58, three of them in the co-operative sector Rs. 4.79 crores, out of which Rs. 1.72 crores came through long term borrowing. There was further development in the industry during the period of next four years and the gross block increased by Rs. 1.29 crores. This was achieved through substantial expansion in the capacity of the old established units of Yamunanagar and Phagwara. There was considerable improvement in net worth and a sum of Rs. 0.76 crore was added to it in the second four year period by increasing paid up capital and retaining profits. The industry liquidated long term loans to the extent of Rs. 42.70 lacs, mostly through payment of loan instalments by the co-operative factories.

The foregoing analysis would show that on the whole there has been good effort on the part of Punjab sugar industry towards its development.

3.2 Profit and loss position

The profit and loss position as revealed from Balance Sheets of Punjab sugar factories for the last 10 years is given in Table VIII-A and it would generally indicate the financial position of the industry.

It will be seen from this Table that the old factories of Yamunanagar and Phagwara have been making good profits all these years. Among the newly established units, Dhuri has been incurring loss year after year. In the Co-operative sector, the two new units of Panipat and Bhogpur, have been making good profits continuously for the past four years, but the one at Rohtak has been running into loss. The reasons for good profits in case of some of the factories appear to be freight advantage on sugar, low rate of purchase tax on cane, absence of Co-operative Societies commission and above all price protection in control periods.

Table VIII-B is based on a study of profit or loss made by factories in various capacity slabs during the two periods of 5 years each *viz.*, 1952-53 to 1956-57 and 1957-58 to 1961-62 and also for the entire period 1952-53 to 1961-62. This position is summarised below :—

	1952-53 to 1956-57	1957-58 to 1961-62	1952-53 to 1961-62
(i) *Factories incurring losses*			
Number	4	2	2
Average loss per year per factory (in lacs of Rs.)	3·71	7·09	6·75
(ii) *Factories making profit*			
Number	2	4	4
Average profit per year per factory (in lacs of Rs.)	4·65	3·79	3·77
(iii) *Total*			
Number	6	6	6
Average profit per year per factory	+1·87	+0·16	+0·73

It will be seen that in the first five year period, 4 factories (all of the new units) incurred loss and the remaining 2 made an average profit of Rs. 4.65 lacs per year per factory. In the second five year period, 2 factories incurred loss and the remaining 4 factories made an average profit of Rs. 3.79 lacs per year per factory. In the entire 10 years period, 2 factories suffered loss and 4 made an average profit of Rs. 3.77 lacs per year per factory. The average profit for the whole region was Rs. 0.73 lacs per year per factory only. It will be seen that whereas Dhuri and Rohtak incurred continued losses, the two new units of Bhogpur and Panipat successfully overcame the teething troubles and made an average profit of Rs. 1.08 lacs per year per factory for the entire six years period after their inception.

Table VII-C shows the dividends paid by Punjab factories since 1952-53. It will be seen that the old units of Yamunanagar and Phagwara have been paying good dividends each year. Leaving aside Dhuri and Rohtak factories which have made continued losses, the two new units of Bhogpur and Panipat have also not paid any dividends so far due to payment of loan instalments.

4. SPECIFIC PROBLEMS OF THE SUGAR FACTORIES

1. **Phagwara**
    1. Good quality cane is diverted for gur manufacture.
    2. A large quantity of cane can be grown and obtained on the Nakodar side but roads are lacking.
    3. Withdrawal of cane of their area by Bhogpur factory.
    4. Cane Co-operative Societies inflate cane estimates.
    5. Lack of early and mid varieties.
    6. Incidence of Gurdaspur borer.
2. **Dhuri**
    1. Deficient supply of cane due to diversion to *gur* manufacture and competition with cotton.
    2. Low rainfall and large allocated area without canals.
3. **Rohtak**
    1. Salinity of tubewell water.
    2. Lack of supplies due to diversion of cane for *gur* manufacture.
    3. Varietal imbalance.
    4. Fuel problem.
4. **Bhogpur**
    1. Incidence of frost and Gurdaspur borer and other pests affecting cane supplies.
    2. Lack of irrigation in most areas and problems of drainage in some areas.
    3. Dearth of feeder roads.

4. Dearth of labour at wheat saving and wheat harvest time thus limiting the crushing season to 120 days.
5. Far flung pockets of cane supply involving high transport cost.

5. **Panipat**

   1. Diversion of cane to *gur*.
   2. Incidence of Gurdaspur borer.

6. **Yamunanagar**

   1. Lack of irrigation.
   2. Incidence of frost.
   3. Lack of seed farms.
   4. Surplus bagasse.

5. RECOMMENDATIONS

A study of the foregoing chapters will show that the productivity level of sugarcane in Punjab is low. The yields are low and the quality of cane about the lowest in the country. Sugarcane, however, has been grown as a cash crop by the cultivators in the normal rotation of agricultural crops. Most of the sugarcane grown in this way has been finding an outlet in *gur* manufacture for local consumption and at the same time has been providing the necessary cash to the cultivators and fodder to the cattle. The local needs for *gur* and the freight advantage have enabled the cultivator to get a fairly good cash return for sugarcane. But while after the grant of protection in 1932, the sugar industry developed considerably in U.P. and Bihar in the private sector, because of ready availability of cane, this did not happen in Punjab because of the adverse factor of low productivity. Only three factories came up namely Yamunanagar on the borders of U.P., Phagwara and Hamira. Because of highly uneconomical working, the Hamira factory which was established as late as 1941 had to shift to Iqbalpur, U.P. in 1955. Another factory came up at Dhuri in 1955. This was the old Japaha sugar factory of Bihar which was shifted to Ranbirsinghpura in Kashmir and then to Dhuri. However, this factory has also been reporting losses continuously for want of cane and on account of low recovery. Recently with the encouragement given to Co-operatives, four factories have been installed in the co-operative sector. Of these Panipat and Bhogpur have been working profitably but Rohtak has been running in loss. The fourth co-operative factory Morinda has come into production only last year. Two more co-operative factories Batala and Nawanshahr are expected to work in 1964-65.

The reasons for the low productivity of sugarcane in Punjab are unfavourable climatic conditions with extremes of temperature, occurrence of frost in all regions in general and in the Ambala district in particular, water logged conditions and high water table involving serious problems of drainage and extensive incidence of pests and diseases. In the Rohtak area the tubewells are reported to have saline water. In recent years competition with *gur* has also affected cane supplies to factories thus adding to their difficulties.

In spite of the above, sugarcane growing has its place in the agricultural economy as it is one of the few crops which can stand these adverse conditions and provide some cash to the cultivator, but sugarcane as a commercial crop for white sugar manufacture as compared to other parts of the country may not be very successful particularly under competing conditions of de-controlled economy. In view of this, the Committee feels that in the matter of establishing new factories a cautious approach will have to be taken.

But in so far as the units already present, have involved considerable investment and a certain industrial atmosphere has been created and the cane cultivators in the surrounding areas of sugar factories have got accustomed to supply cane to sugar factories, they must be made as economic as possible. For this reason, it would be necessary to improve the productivity as much as possible in terms of yield and quality and factory efficiency.

All efforts to improve the sugarcane crop must be directed to these factory areas with a view to meeting the cane requirements of these factories at their existing capacities and the maximum capacities to which they can expand without having to put up a new milling plant, but effecting such modifications to their existing milling plants as will enable them to increase the crushing capacity and the boiling house machinery balanced to meet the increased crush. Only those factories should be allowed to replace their existing milling plant with a new one where the old plant has outlived its life and is not capable of extension or modification for achieving efficient results.

The State has at present seven working factories and two more are likely to come up in 1964-65. As against the estimated consumption of sugar in the State of approximately 1.8 lac tonnes per annum, the maximum production so far has been about 1.2 lac tonnes in 1960-61. The State is thus still deficit in sugar. This gap would be bridged to a great extent, by the coming into production of the two new co-operatives *viz.*, Batala and Nawanshahr, and the expansion of the existing units.

One of the obvious steps to improve the economy of all the units, both old and new, particularly with the low recoveries obtaining in this State, is to expand their capacities to the maximum extent possible. The existing capacities of the factories and the expansions asked for by them and the expansion recommended by the Committee are given below :—

Name of Factory	Existing capacity (tonnes) 1963-64 season	Capacity upto which extension license already granted (tonnes)	Expanded capacity asked for (tonnes)	Expansion as recommended by the Committee (Tonnes)
1. Phagwara	863	1,200	1,200	1,200
2. Dhuri	1,016	..	1,500	1,500
3. Rohtak	1,016	1,500	1,500	1,500
4. Bhogpur	1,016	..	1,500	1,500
5. Panipat	1,270	1,500	1,500	1,500
6. Morinda	1,270	..	..	..
7. Yamunanagar	3,302	4,000	4,000	4,000

The Committee has estimated the total cost of rehabilitation, modernisation and expansion for the above factories (6) as Rs. 2.0 crores.

The new units do not need any rehabilitation or modernisation but only expansion. The first phase in this expansion recommended by the Committee is to the extent permitted by the existing milling units with small additions and changes. The Committee is of the view that it is imperative for these factories to attain the extended capacities at the earliest, and therefore, recommends expansions as given above.

As observed earlier, it is necessary to put in all efforts to intensify cane cultivation so that simultaneous to rehabilitation, modernisation and expansion of the units the increased requirements of cane are met with. The following measures are recommended for immediate implementation :

1. Sugarcane production and development

(i) Introduction of the intensive development scheme in the factory areas on the lines of U.P. in blocks of 4,000 acres. In addition small blocks of 200-250 acres should be selected as packaged units for demonstrating the maximum potential for yields and quality in different blocks in the factory areas.

(ii) The areas under sugarcane should be compacted around the factories to reduce the transport costs and ensure fresh cane supplies. Steps directed to encourage increased cultivation nearer the factories and discourage remote areas of cane cultivation should be given effect to.

(iii) Credit facilities to growers of sugarcane should be made increasingly available to ensure that his efforts to improve productivity are not handicapped by his meagre resources.

(iv) Encouragement should be given to growers to use modern implements for land preparation. Schemes by the Government or by independent agencies which provide tractors, implements and other land preparatory devices on hire and workshops to service and maintain farm implements should be encouraged to come into existence. Purchase of tractors and implements by such organization should where possible be subsidised.

(v) *Varieties and Pure Seed* : The main characteristic of Punjab is the prevalence of large number of cane varieties introduced due to the quick deterioration as a result of the adverse conditions of irrigation and drainage. The breeding programmes need to be intensified for introducing better varieties with improved yields and sugar content suited to the peculiar conditions of frost, lack of drainage etc. prevailing in Punjab. It is also necessary to intensify the programme of seed supplies to ensure continuity of pure varieties.

(vi) *Irrigation* : While serious drainage problems have been presented in some areas, equal stress has been laid to the urgent requirement of irrigation facilities in other areas. Some of the factories have represented the lack of availability of water in canals from March to June when the need of the cane crop for water is the greatest. In the some way water requirements during the months of December and January to prevent frost bite are not being met. The Committee feels that a solution to this should be possible and urges the State Government to look into this aspect as the lack of water both during the frost months and the summer months may seriously affect both the yields and quality of sugarcane.

The additional requirements of irrigation have been estimated in the existing factory areas as follows :

	No. required	Estimated cost (Rs. Crores)
State tubewells	1,400	11·20
Private tubewells	1,020	0·76
Masonry wells	1,200	0·30

In so far as the number of factories are few and the requirements are comparatively small, it should be possible for the State to solve the difficulties of the factories in respect of irrigation from its own resources over a period of five years or so.

(vii) *Water Logging and Drainage* : It has been reported that the water logged areas in Punjab are quite extensive. The new canal system for supplying water to Rajasthan has adversely affected natural drainage in certain areas in Punjab thus bringing more areas under water logged conditions. This condition has been further aggravated by the increase in the average rainfall from about 25 inches to 35 inches and even 50 inches during some years. This water-logged condition must not only be affecting the productivity of the cane crop but the agricultural crops in general. The Committee views this situation with concern and unless speedy steps are taken to introduce proper drainage systems, it may be difficult to check the falling yields and quality of sugarcane. Such water logged conditions are also conducive to the increasing incidence of pests and diseases.

(viii) *Manures and Fertilisers* : Application of manures and fertilisers in adequate quantities is a must for increasing productivity. This, however, has to be preceded by adequate irrigation facilities. In Punjab the grower meets about 50 per cent of the nitrogen requirement through farm yard manure, compost, factory yard compost and other organic matter. He has to supplement another 60-80 lbs. of nitrogen per acre by suitable inorganic fertilisers. It is also necessary to balance this nitrogen feeding with simultaneous applications of phosphate and potash. The requirements of fertilisers in the factory areas of Punjab are estimated at 19,000 tonnes chemical fertilisers, 6,000 tonnes of cakes and sterameal and 1,500 tonnes of green manure seeds.

Manures and fertilisers applied to the fields would yield results only if they are made available at the proper time. At present Punjab State

Supply and Marketing Federation is the sole agent for distributing fertilisers. The distribution is being done through the district wholesale societies. It has been represented that the Federation does not have the necessary resources to build godowns at appropriate places and stock fertilisers to enable speedy and timely distribution. It has been suggested that the industry should be entrusted with this task of distribution of fertilisers. The Committee feels that the association of the industry in the matter of distribution of manures and fertilisers would be helpful to the growers and would bring the factory and the grower in closer contact for mutual benefit.

(ix) *Plant Protection* : It has been reported that most of the Punjab factory areas are infested with either or some of the following insects, pests and diseases:

(a) White fly

(b) Pyrilla

(c) Gurdaspur borer

(d) Top borer

(e) Red rot.

The increasing incidence of pests and diseases particularly of Gurdaspur borer and red rot indicates the urgency of a very efficient plant protection squad. It appears that the present plant protection organisation of the cane department will need to be strengthened considerably. Biological control of insect pests should be intensified in preference to chemical insecticides. Effective quarantine measures should be introduced to check the entry of new pests and diseases into these areas.

(x) *Maturity Harvesting* : Preharvesting maturity survey of the standing cane crop and arrangement of supply schedules, based on such a survey properly conducted, would help increase the recovery. Arrangements should be made for training the factory staff in this direction so that harvesting on maturity basis becomes an established practice.

(xi) *Administrative Measures*: The Committee has felt the need for greater co-ordination in the efforts of the different departments of the Government and all agencies directly or indirectly connected with sugarcane development such as Cane Department including sugarcane research, Irrigation Department, P.W.D. and Agriculture. Cane development should be the responsibility of one authority preferably the Cane Commissioner with an assured co-operation from the various departments through a High Power Board constituted at the State level and consisting of Secretaries of Agriculture and Co-operation, Industries, Public Works, Irrigation and Community Development etc. In view of the importance of this industry, the Chief Minister of the State should be the Chairman with the Ministers of Agriculture and Co-operation as Vice-Chairmen and the Cane Commissioner as Secretary.

2. Communications

Communications for speedy transport of the raw material sugarcane as well as to reduce transport costs are of great importance. The present plans for communications development cover only 617 kms. of *pucca* roads. The additional requirement of communications for the factory areas as represented by the industry are 417 kms. of *pucca* roads, 126 bridges and 273 culverts.

The estimated cost for development of communication requirements is Rs. 3.00 crores. If the road development programme is spaced over a period of five years a provision of about 60 lacs of rupees a year would meet the developmental needs so far as the communications are concerned.

3. Surplus labour

So far as the factories in Punjab are concerned as the majority of the factories are new and modern, the problem of surplus labour would not arise. Actually, there would be scope for additional employment by the expansion of the units.

4. By-products utilisation

Except one, all the factories in Punjab are carbonation factories. The molasses that is produced is being mostly supplied to distilleries for the production of industrial alcohol. The press mud has not found so far a proper utilisation. Further research work in this direction is urgently called for. The direction in which efforts will have to be made for improving the economy of the Punjab sugar factories, is in the fuller utilisation of its bagasse production. In so far as oil and coal resources are not near at hand, saved bagasse only can be utilised for developing bagasse based industries. By intensification of steam and fuel economy, it is estimated that enough bagasse can be saved to feed a 100 ton per day paper plant or 4–5 cardboard factories.

5. Finance Required

The above measures namely rehabilitation, modernisation and expansion of the factory equipment and the development of sugarcane and increasing productivity in terms of quality and quantity of sugarcane would involve considerable finance. The need on the factory side is estimated at Rs. 2.0 crores while that on irrigation and communications is assessed at Rs. 15.26 crores. Obviously this expenditure will be spread over a five-year period. The whole of the cess proceeds could be utilised for other cane development programmes. The Committee feels that there is no other alternative for improving the economy of these units except to undertake the development programme suggested above and therefore strongly recommends that the necessary finance be found and the necessary executive machinery brought into being.

TABLE I-A

Area Under Cane

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Area under cane (000 acres)			
			1959-60	1960-61	1961-62	1962-63
1.	Phagwara	863	16·7	19·3	19·7	14·8
2.	Dhuri	1,016	10·4	13·2	14·6	8·3
3.	Rohtak	1,016	15·1	19·6	21·7	20·8
4.	Bhogpur	1,016	23·5	43·7	39·3	27·8
5.	Panipat	1,270	12·1	16·0	23·2	25·3
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . .	3,302	48·9	56·1	62·5	43·1
	TOTAL		126·7	167·9	171·0	140·1

N.A.—Not Available.
Source : Factory Returns.

TABLE I-B

Estimated Yield of Cane per Acre

Sl. No.	Particulars	Yield per acre (tonnes)			
		1959-60	1960-61	1961-62	1962-63
1.	In whole State	14·52	15·35	13·23	13·11
2.	In development zones . . .	19·10	19·20	17·73	16·59

Source : Indian Central Sugarcane Committee.

TABLE 1-C

Percentage Utilisation of Cane Crop for White Sugar

Sl. No.	Name of Factory	1959-60	1960-61	1961-62	1962-63
1.	Phagwara	64·0	70·0	60·0	53·0
2.	Dhuri	57·0	56·0	60·0	40·0
3.	Rohtak	40·0	35·0	39·0	22·0
4.	Bhogpur	70·0	65·0	50·0	30·0
5.	Panipat	64·0	59·0	33·0	21·0
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	78·0	82·0	55·0	55·0
	AVERAGE	62·2	61·2	46·2	36·8

N.A.—Not Available.
Source : Factory Returns.

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Actual supplies made to the factories (000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1.	Phagwara . . .	863	146·0	175·0	125·0	92·0
2.	Dhuri	1,016	101·7	129·8	102·3	52·0
3.	Rohtak . . .	1,016	149·2	171·9	153·2	88·4
4.	Bhogpur . . .	1,016	142·0	185·0	127·0	55·0
5.	Panipat . . .	1,270	138·0	170·0	145·0	114·0
6.	Morinda . . .	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . .	3,302	440·0	539·0	447·0	291·0
	TOTAL . . .		1,116·0	1,370·0	1,099·5	692·4

N.A.—Not Available.

Source : Factory Returns.

TABLE I-E

Percentage of Gate, Road and Rail Cane and Number of Growers

Sl. No.	Name of Factory	Capacity (tonnes/ day)	% gate cane	% road cane	% rail cane	No. of growers supplying cane to the factory (1962-63)
1.	Phagwara . . .	863	92·5	Nil	7·5	13,027
2.	Dhuri	1,016	73·0	19·0	8·0	8,000
3.	Rohtak	1,016	43·0	57·0	Nil	2,200
4.	Bhogpur	1,016	48·0	8·0	44·0	18,225
5.	Panipat	1,270	60·0	40·0	Nil	12,000
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . . .	3,302	33·0	55·0	12·0	20,565

N.A.—Not Available.

Source : Factory Returns

TABLE II-A

Area Irrigated and Requirements in Respect of Irrigation

Sl. No.	Name of Factory	Balance area to be irrigated (000 acres)	Requirements of means of irrigation: State tube wells	Private tube wells	Masonry wells & pumping sets
1.	Phagwara	7·0	..	20	500 M.W. 200 P.S.
2.	Dhuri	95·1	..	..	500PS..
3.	Rohtak	104·0	N.A.	N.A.	N.A.
4.	Bhogpur	100·0	..	1,000	..
5.	Panipat	100·6	400	..	..
6.	Morinda	..	..	..	..
7.	Yamunanagar	720·0	1,000	..	..
	TOTAL		1,400	1,020	1,200

M.W.=Masonry Wells.
P.S.=Pumping Sets.
N.A.=Not Available.
Source : Factory Returns.

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TABLE II-B

Manures and Fertilizers

Sl. No.	Name of Factory	Requirements of manures & fertilizers (in tonnes): Chemical fertilizers	Cakes & sterameal etc.	Green manure seed
1.	Phagwara	900	..	25
2.	Dhuri	2,000	..	..
3.	Rohtak	2,500	..	N.A.
4.	Bhogpur	1,500	..	N.A.
5.	Panipat	1,000	1,000	500
6.	Morinda	1,000	..	20
7.	Yamunanagar	10,000	5,000	1,000
	TOTAL	18,900	6,000	1,545

N.A.=Not Available.
Source : Factory Returns.

TABLE II-C

Cane Seed Requirements

Sl. No.	Name of Factory	Amount of seed requirement (yearly tonnes)
1.	Phagwara	24,000
2.	Dhuri	18,662
3.	Rohtak	30,000
4.	Bhogpur	50,000
5.	Panipat	5,600
6.	Morinda	7,400
7.	Yamunanagar	75,000
	TOTAL	210,662

Source : Factory Returns.

TABLE II-D

Means of Communications

Sl. No.	Name of Factory	Existing *Pucca* road in factory zone (Kms.)	Requirements		
			Pucca roads in Kms.	No. of bridges	No. of culverts
1.	Phagwara	98	17	2	3
2.	Dhuri	70	66	..	..
3.	Rohtak	110	100	10	100
4.	Bhogpur	45	40	10	30
5.	Panipat	80	48	4	40
6.	Morinda	64	64	..	..
7.	Yamunanagar	150	82	100	100
		617	417	126	273

Source : Factory Returns.

TABLE III-A

Milling Plant

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Cane knives Total H. P. & No. of sets	Milling tandem	Mill drive	
					Type	Total H.P.
1.	Phagwara . .	863	220(2)	16/25″×48″	E	700
2.	Dhuri . . .	1,016	220(2)	15/26″×53″	E	525
3.	Rohtak . . .	1,016	300(2)	15/28″×56″	E	800
4.	Bhogpur . .	1,016	300(2)	18/28″×56″	E	800
5.	Panipat . . .	1,270	250(2)	18/28″×56″	E	700
6.	Morinda . .	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . . .	3,302	190(2)	21/24″×48″	E	610
			350(2)	18/33″×66″	E	2,300

E=Steam Engine.

N.A.=Not Available.

Source : Factory Returns.

TABLE III-B

Power and Steam Generating Plants

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Power generating units Total KW	Boilers No./H.S./Pressure (sq. ft.) (p.s.i.)	H.S. per cent boiler H.S.	
					Economic	Super heater
1.	Phagwara . .	863	650	5/17814/160 4510/200	Nil	8·0
2.	Dhuri . . .	1,016	250	3/12550/160	Nil	Provided in one boiler
3.	Rohtak . . .	1,016	1,000	4/20000/190	Nil	Nil
4.	Bhogpur . .	1,016	1,000	4/20000/195	Nil	8·0
5.	Panipat . . .	1,270	850	3/21000/225	14·3	36·9
6.	Morinda . .	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar .	3,302	3,500	10/53180/160	3·7	5·0

N.A.=Not Available.

Source : Factory Returns.

TABLE III-C

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Juice weighment manual/automatic	Juice heaters		
				Total H.S. (sq. ft.)	Vertical or horizontal	Vapour line Juice heater H.S. (sq. ft.)
1.	Phagwara	863	A	3,200	V	Nil
2.	Dhuri	1,016	M	4,000	V	1,000
3.	Rohtak	1,016	A	4,000	V	Nil
4.	Bhogpur	1,016	A	3,000	V	Nil
5.	Panipat	1,270	A	3,000	V	Nil
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . . .	3,302	A	14,800	V	4,800

A=Automatic.
M=Manual.
V=Vertical.
N.A.=Not Available.
Source : Factory Returns.

TABLE III-C ii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Sulphitation or carbonation tanks	Settling*	Filtration	Pre-heater H.S. (sq. ft)	Vapour cell H.S. (sq.ft.)	Evaporators	
								Type	Vapour bleeding
1.	Phagwara	863	B	..	B	500	Nil	Q	No
2.	Dhuri	1,016	B	...	B	Nil	Nil	T	No
3.	Rohtak	1,016	B	..	B	Nil	Nil	Q	No
4.	Bhogpur	1,016	B	..	B	1,000	Nil	Q	No
5.	Panipat	1,270	B	..	B	1,000	Nil	Q	No
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . . .	3,302	B	...	B	1,590	11500	Q	No

*Except Morinda, all the factories follow carbonation process of clarification where all the juice is filtered.

B=Batch.
Q=Quadruple.
T=Triple.
N.A.=Not Available.
Source : Factory Returns

TABLE III-Ciii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes day)	Pans		Lower grade crystallizers	
			Total capacity tonnes	Per cent coil capacity	No.	Per cent water cooled capacity
1.	Phagwara	863	122	18·0	5	100·0
2.	Dhuri	1,016	92	Nil	6	100·0
3.	Rohtak	1,016	120	25·0	5	100·0
4.	Bhogpur	1,016	115	21·7	5	100·0
5.	Panipat	1,270	160	Nil	N.A.	N.A.
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	3,302	382	7·0	8	100·0

N.A.=Not Available.
Source : Factory Returns.

TABLE III-Civ

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Centrifugals			
			Ordinary		High speed	
			No.	Size	No.	Size
1.	Phagwara	863	36	18″×36″	..	..
2.	Dhuri	1,016	18	18″×30″	4	32″×49″
3.	Rohtak	1,016	..	..	10	20″×42″
4.	Bhogpur	1,016	7 6	20″×42″ 18″×30″	5	20″×42″
5.	Panipat	1,270	20	24″×42″	—	—
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	3,302	28 30	20″×42″ 18″×30″	7 5 9	32″×49″ Continuous 24″×48″

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	11·34	11·19	10·88	10·92
2.	Dhuri	10·61	11·44	11·12	11·33
3.	Rohtak	11·20	11·40	10.83	11·02
4.	Bhogpur	11·33	11·14	10·27	10·65
5.	Panipat	11·77	11·80	11·22	11·43
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	12·17	11·59	10·84	11·58

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Aii

Cane Quality (Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	14·77	15·77	14·84	15·38
2.	Dhuri	15·59	16·54	16·57	16·23
3.	Rohtak	15·10	15·18	15·84	14·35
4.	Bhogpur	14·60	15·24	15·59	15·12
5.	Panipat	14·79	15·39	16·53	15·14
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	15·18	16·93	15·26	15·51

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Aiii

Cane Quality (Primary juice purity)

Sl. No.	Name of Factory	Primary juice purity			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	78·93	78·38	76·25	77·96
2.	Dhuri	79·44	79·42	78·87	82·11
3.	Rohtak	79·76	80·50	77·04	79·92
4.	Bhogpur	80·09	79·39	78·66	79·31
5.	Panipat	79·36	80·25	79·54	79·79
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	79·93	79·19	78·48	81·23

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Bi

Time Account (Duration of season)

Sl. No.	Name of Factory	Duration of season			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	164	196	147	110
2.	Dhuri	124	162	128	68
3.	Rohtak	150	179	156	91
4.	Bhogpur	148	176	122	89
5.	Panipat	141	158	130	99
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	186	215	180	118

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Bii

Time Account (Time loss)

Sl. No.	Name of Factory	Time lost per cent available			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	10·10	11·02	9·74	11·96
2.	Dhuri	14·14	16·46	13·08	15·29
3.	Rohtak	13·02	17·84	13·52	21·17
4.	Bhogpur	16·37	10·18	9·57	40·97
5.	Panipat	14·00	13·40	13·20	9·80
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	21·54	26·71	26·04	26·74

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Ci

Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	9·02	8·77	8·43	8·83
2.	Dhuri	8·40	9·06	8·56	9·19
3.	Rohtak	8·79	8·79	8·00	8·55
4.	Bhogpur	8·89	8·55	7·84	8·52
5.	Panipat	9·48	9·48	8·79	9·11
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	9·44	8·93	8·09	9·13

N.A.=Not Available
Source : Factory Returns.

TABLE IV-Cii
Technical Efficiency (Total losses)

Sl. No.	Name of Factory	Total losses per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	2·32	2·42	2·25	2·09
2.	Dhuri	2·21	2·38	2·56	2·14
3.	Rohtak	2·43	2·61	2·83	2·47
4.	Bhogpur	2·44	2·59	2·43	2·14
5.	Panipat	2·31	2·34	2·45	2·34
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	2·75	2·68	2·77	2·47

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Ciii
Technical Efficiency (Reduced overall extraction)

Sl. No.	Name of Factory	Reduced overall extraction			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	85·76	86·75	86·35	87·14
2.	Dhuri	85·53	85·94	84·88	86·75
3.	Rohtak	84·99	83·65	83·61	83·72
4.	Bhogpur	82·97	82·98	83·10	84·91
5.	Panipat	86·18	85·97	85·34	85·80
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	83·84	84·58	82·83	84·25

सत्यमेव जयते

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Di
Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed per cent cane in terms of bagasse			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	32·56	34·40	31·96	32·98
2.	Dhuri	34·01	36·03	35·44	34·28
3.	Rohtak	33·70	35·11	36·18	35·47
4.	Bhogpur	31·61	32·70	33·40	32·18
5.	Panipat	31·48	32·74	35·16	32·49
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	32·28	34·79	33·17	32·06

N.A.=Not Available.
Source : Factory Returns.

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed per cent cane in terms of bagasse			
		1959-60	1960-61	1961-62	1962-63
1.	Phagwara	0·44	0·36	0·32	0·29
2.	Dhuri	0·88	1·12	0·44	0·89
3.	Rohtak	1·90	2·59	2·04	3·43
4.	Bhogpur	0·75	0·33	0·19	0·44
5.	Panipat	Nil	Nil	Nil	Nil
6.	Morinda	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	0·49	0·27	0·78	0·43

N.A.=Not Available.

Source : Factory Returns.

सत्यमेव जयते

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Specification of existing milling tandem	Expansion as asked for by the factories (tonnes)	Financial requirement as submitted by the factories (lac Rs.)
1.	Phagwara . . .	863	16/25″×48″	1,250	37·50
2.	Dhuri	1,016	15/26″×53″	1,500	46·52
3.	Rohtak . . .	1,016	15/28″×56″	1,500	8·00
4.	Bhogpur . . .	1,016	15/28″×56″	1,500	N.A.
5.	Panipat . . .	1,270	18/28″×56″	2,500	N.A.
6.	Morinda . . .	1,270	N.A.	N.A.	N.A.
7.	Yamunanagar . .	3,302	21/24″×48″ 18/33″×66″	4,000	100·85

N.A.=Not Available.

Source : Factory returns.

TABLE VI-A

Existing Strength of Labour and Labour Considered Surplus at Present and After Modernisation

Sl. No.	Name of Factory	Capacity (tonnes /day)	Total labour employed	Labour surplus now		Labour surplus after modernisation	
				Skilled & semi skilled	Unskilled	Skilled & semi skilled	Unskilled
1.	Phagwara	863	934	Nil	Nil	Nil	Nil
2.	Dhuri	1,016	714	Nil	Nil	Nil	Nil
3.	Rohtak	1,016	800	Nil	Nil	Nil	Nil
4.	Bhogpur	1,016	925	Nil	Nil	Nil	Nil
5.	Panipat	1,270	847	Nil	Nil	Nil	Nil
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	3,302	2,088	Nil	Nil	Nil	Nil
	TOTAL		6,308				

N.A. = Not Available.
Source : Factory Returns.

TABLE VI-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Man days/tonne of sugar			
			1959-60	1960-61	1961-62	1962-63
1.	Phagwara	863	11·5	11·8	12·8	12·5
2.	Dhuri	1,016	10·4	9·8	10·4	10·1
3.	Rohtak	1,016	9·1	9·5	10·1	9·6
4.	Bhogpur	1,016	10·8	10·3	11·3	17·6
5.	Panipat	1,270	9·1	8·3	9·7	8·1
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	3,302	9·4	9·3	10·4	9·3

N.A. = Not Available.
Source : Factory Returns.

TABLE VII—A

Utilisation of Bye-products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (average of 5 seasons)			
			Production (000 tonnes)	Used as fuel (000 tonnes)	Saved & sold (tonnes)	Value realised (Rs.)
1.	Phagwara	863	43·60	43·32	280	4,300
2.	Dhuri	1,016	31·12	31·02	100	1,320
3.	Rohtak	1,016	40·52	40·52	Nil	Nil
4.	Bhogpur	1,016	39·78	39·78	Nil	Nil
5.	Panipat	1,270	45·00	43·08	1,920	33,000
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar	3,302	137·06	132·18	4,875	63,120
	TOTAL		337·08 (for 6 fys.)	329·90	7,175	1,01,740

N.A. = Not Available.
Source : Factory Returns.

TABLE VII-B

Utilisation of Bye-products (Molasses)

Sl. No.	Name of Factory	Capacity (tonnes/day)	Molasses (average of 5 seasons)			
			Production (000 tonnes)	Quantity utilised for distillery & trade (000 tonnes)	Surplus left (tonnes)	Value realised (000 Rs.)
1.	Phagwara	863	4·82	4·82	Nil	N.A.
2.	Dhuri	1,016	2·86	2·86	Nil	50·77
3.	Rohtak	1,016	4·64	4·64	Nil	N.A.
4.	Bhogpur	1,016	4·82	4·82	Nil	N.A.
5.	Panipat	1,270	4·70	2·52	2,180	82·91
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . .	3,302	15·72	13·96	1,760	154·31
	TOTAL .		37·56 (for 6 fys.)	33·62	3,940	

N.A.=Not Available.
Source : Factory Returns.

सत्यमेव जयते

TABLE VII-C

Utilisation of Bye-products (Press-mud)

Sl. No.	Name of Factory	Capacity (tonnes/day)	Press-mud (average of 5 reasons)			
			Production (000 tonnes)	Sold or utilised as manure (000 tonnes)	Surplus left (000 tonnes)	Value realised (Rs.)
1.	Phagwara	863	8·76	Nil	8·76	Nil
2.	Dhuri	1,016	6·36	Nil	6·36	Nil
3.	Rohtak	1,016	9·24	Nil	9·24	Nil
4.	Bhogpur	1,016	8·66	Nil	8·66	Nil
5.	Panipat	1,270	9·82	Nil	9·82	Nil
6.	Morinda	1,270	N.A.	N.A.	N.A.	N.A.
7.	Yamunanagar . .	3,302	31·60	Nil	31·60	Nil

N.A.=Not Available.
Source : Factory Returns.

TABLE VIII-A

Profit after Tax or Loss of the Factories During the Ten Yeras Ending 1961-62

(Amount in lacs of Rupees)

Sl No.	Name of factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average per year
1.	Phagwara	2·17	3·27	3·37	1·30	2·19	4·81	3·02	5·62	3·43	1·49	30·67	3.07
2.	Dhuri	..	..	..	—2·47	—11·67	—7·79	—10·27	—5·91	—1·21	—4·26	—43·58	—6·23
3.	Rohtak	..	..	..	..	—2·73	—18·58	—14·83	2·22	1·51	—11·80	—44·21	—7·37
4.	Bhogpur	..		..	..	—1·56	3·45	—4·82	3·24	2·39	1·20	3·90	0·65
5.	Panipat	..	..	..	..	—0·11	0·92	—3·44	1·89	4·07	5·74	9·07	1·51
6.	Yamunanagar	10·13	5·45	—0·72	9·03	10·34	10·73	10·12	10·20	10·53	1·12	76·93	7·69
	Average	6·15	4·36	1·32	2·62	—0·59	—1·08	—3·37	2·88	3·45	—1·09	0·73	0·73

NOTE.—Determination of income tax on profits is a very elaborate process and it has not been possible for this Committee to assess the exact position. Fifty per cent of the gross profits has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII-B

Profitability of the Factories in Different Capacity Slab's

(Amount in lacs of Rupees)

Sl. No.	Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available	Profit or loss for above period	Average profit or loss per year	No. of years for which data available	Total profit or loss for above period	Average profit or loss per year	No. of years for which data available	Profit or loss for above period	Average profit or loss per year
(*a*)	***Factories with capacities between 500 to 749 tonnes,***									
(**d**)	***Factories with capacities between 750 to 999 tonnes.***									
	1. Phagwara	5	+12·30	+2·46	5	+18·37	+3·67	10	+30·67	+3·07
(*c*)	***Factories with capacities between 1000 tonnes and above***									
	1. Dhuri	2	—14·14	—7·07	5	—29·44	—5·89	7	—43·58	—6·23
	2. Rohtak	1	—2·73	—2·73	5	—41·48	—8·30	6	—44·21	—7·37
	3. Bhogpur	1	—1·56	—1·56	5	+5·46	+1·09	6	+3·90	+0·65
	4. Panipat	1	—0·11	—0·11	5	+9·18	+1·84	6	+9·07	+1.15
	5. Yamunanagar	5	+34·23	+6·83	5	+42·70	+8·54	10	+76·93	+7·69
	No. of factories showing loss			4			2			2
	No. of factories showing profit			1			3			3
	Average profit or loss per year per factory			1·57			—0·54			+0·06

TABLE VIII-C

Dividends paid on ordinary shares by the Factories Since 1952-53

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1.	Phagwara	10·00	N.A.	10·00	10·00	10·00	15·00	15·00*	18·00*	18·00*	12·00
2.	Dhuri	..	..	..	..	..	..		..	..	..
3.	Rohtak	..	..	..	..	..	..	..	..	..	..
4.	Bhogpur	..	..	..	..	..	..	..	..	..	..
5.	Panipat	..	..	..	..	..	..	..	..	..	..
6.	Yamunanagar	15·00	15·00	15·00	15·00	15·00	15·00	15·00*	15·00*	15·00*	15·00*

N.A.=Not Available.
*Subject to income tax.

WEST UTTAR PRADESH

1. GENERAL ASPECTS

1.1 The West U.P. region, in so far as sugar industry is concerned, covers 16 districts *viz.* Dehradun, Saharanpur, Muzaffarnagar, Bijnor, Meerut, Hardoi, Bulandshahr, Nainital, Etah, Moradabad, Rampur, Bareilly, Pilibhit, Kheri, Sahajahanpur and Sitapur (in part). These districts broadly lie between longitudes. 77° to 81° and latitudes 27° to 30.5° and thus fall in the temperature zone. Rainfall in the region is on an average 90–100 cms. confined within the months of June to September with maximum precipitation in July and August. There is some winter rain also during December and January. Climate is extreme, reaching a maximum of about 46°C in summer (May—June) and a minimum of about 1°C in winter (January). In the hilly districts the temperature reaches below freezing point in winter months. Relative humidity during the year varies between 33 and 92. Most of the area has rich alluvial soil which is very fertile. The cultivators are hardy and industrious and the level of agriculture is high.

1.2 Density of population, size of holdings, and economic condition of people

The density of population in West U.P. is not very high being about 217 per sq. Km., the density in the 16 sugar districts being 267 per sq. Km. Quite a large number of growers supply cane to most of the sugar factories, showing that holdings are small.

The per capita income for 1960-61 at current prices has been estimated by the Committee at Rs. 326.53 on the basis of certain income data published by National Council of Applied Economic Research.

1.3. Establishment and growth of the sugar industry in the West U.P. region

Sugarcane has been grown in this region for centuries as a cash crop and as a crop providing green fodder for the cattle. The region has been having the *gur* and *khandsari* industries for centuries not only for local consumption but for supplies to other states in India.

Ready availability of cane also contributed to the establishment of the white sugar industry in this region. Most of the factories were established soon after the grant of protection to the sugar industry in 1932. The establishment of factories during this time was rather rapid and a large number of small sized units were set up. Most of them have subsequently increased their capacities. In recent years however only three new co-operative factories have come up in the region. One more co-operative factory at Majhola has to start crushing operations from the 1964-65 season.

1.4 Distribution of sugar factories

The distribution of the thirtyeight factories working at present in the various districts of West U.P. and their existing daily cane crushing capacities are as follows :—

Sl. No.	Name of the District	Name of Factory	Existing daily cane crushing capacity in tonnes/day
1.	Dehradun	(*i*) Doiwala	528
2.	Saharanpur	(*i*) Sarsawa	1,219
		(*ii*) Saharanpur	1,321
		(*iii*) Lhaksar	1,524
		(*iv*) Deoband	1,626
		(*v*) Iqbalpur	1,829
3.	Muzaffarnagar	(*i*) Rohanakalan	1,372
		(*ii*) Mansurpur	1,829
		(*iii*) Khatauli	2,032
		(*iv*) Shamli	3,048
4.	Bijnor	(*i*) Bijnor	1,067
		(*ii*) Dhampur	2,032
		(*iii*) Seohara	3,251
5.	Meerut	(*i*) Bagpat	1,016
		(*ii*) Modinagar	1,067
		(*iii*) Sakhotitanda	1,118
		(*iv*) Mohiuddinpur	1,158
		(*v*) Meerut	1,219
		(*vi*) Daurala	1,422
		(*vii*) Simbhaoli	2,032
		(*viii*) Mawana	3,048
6.	Hardoi	(*i*) Hardoi	1,829
7.	Bulandshahr	(*i*) Panninagar	1,016
8.	Nainital	(*i*) Bazpur	1,219
		(*ii*) Kashipur	1,524
9.	Etah	(*i*) Neoli	1,270
10.	Moradabad	(*i*) Amroha	1,255
		(*ii*) Raja-ka-Sahaspur	1,524
11.	Rampur	(*i*) Buland	1,016
		(*ii*) Raza	1,168
12.	Bareilly	(*i*) Bareilly	1,016
		(*ii*) Baheri	1,300
13.	Pilibhit	(*i*) Pilibhit	1,778
14.	Kheri	(*i*) Aira	660
		(*ii*) Gola	3,658
15.	Shahjahanpur	(*i*) Rosa	737
16.	Sitapur	(*i*) Maholi	1,524
		(*ii*) Hargaon	2,642

सत्यमेव जयते

1.5 System of cane marketing and cane development in U.P.

There is an elaborate system of cane marketing and cane development in U.P., the details of which are given in Appendix II. The extent of development work done till 1961-62 and the amount of purchase tax collected and spent for development is also shown in Appendix II.

2. TECHNICAL ASPECTS

2.1 Area under cane and yield per acre

Each sugar factory in U.P. has been allotted to it a specified area from which it can draw its cane supplies, called the reserved area.

The position with regard to the area under cane in the reserved zones of the factories is given in Table I-A and estimated yield per acre in Table I-B.

It will be seen from the figures given in these tables that (i) the area under cane has generally increased in 1960-61 over that in 1959-60, it increased further in 1961-62 but in 1962-63 it has again gone down generally to 1960-61 level and (ii) the yield per acre is poor being generally 13-19 tonnes only. The average yield of sugarcane per acre in the areas reserved for sugar factories in Uttar Pradesh is estimated on the basis of crop cutting experiments by the Cane Development Department of U.P. Government.

2.2 Cane supplies to sugar mills

The percentage of cane utilised for white sugar manufacture is shown in Table I-C, the actual supplies made to sugar factories in Table I-D and the percentage supply of gate, road and rail cane in Table I-E.

It will be seen from Table I-C that the average supplies of cane to sugar mills in the West U.P. region (for 25 factories who have supplied these data) have generally gone down from about 50 per cent to 35 per cent of the total cane produced in their reserved zones, the major portion of the remaining having been utilised for the production of *gur* and *khandsari*.

Table I-D shows that the cane crushed by the 27 factories in 1959-60 was 6,169 thousand tonnes, it increased to 7,286 thousand tonnes in 1960-61 but went down to 6,110 thousand tonnes in 1961-62 and to only 4,480 thousand tonnes in 1962-63 due to reduction in acreage on account of 10 per cent cut and diversion of cane for *gur* manufacture.

It will be seen from Table I-E that rail centres exist in 14 factories out of 28 reporting factories of West U.P., the percentage of rail cane in Neoli, Bareilly, Amroha, Lhaksar, Pilibhit, Hardoi, Seohara and Shamli being high.

2.3 Irrigation, application of manures and fertilisers and supply of seed

The existing position in the various factories in respect of irrigation, supply of manures and fertilisers and supply of seed is given in Table II-A, II-B, II-C respectively. The actual requirements in respect of each item of development for obtaining proper yields and supplies of cane are also indicated in these tables.

It will be seen from Table II-A that the area irrigated (commanded area) to total culturable area in reserved zones of West U.P. factories is only about 27 per cent which is quite inadequate. The actually irrigated area, is however, much less. The existing means of irrigation in the shape of canals, state tubewells, private tubewells, masonry wells, *rahats* and pumping sets are insufficient.

It will be seen that the West U.P. factory zones still require nearly 2,866 state tubewells, 2,866 private tubewells and 19,760 masonry wells. The cost of constructing 2,866 state tubewells will be about Rs. 23.0 crores.

Private tubewells are constructed by the growers themselves and the loan requirement at Rs. 6,000 each for 2,866 tubewells will be Rs. 171.96 lacs whereas subsidy at Rs. 1,500 each will be Rs. 42.99 lacs. Loan requirement for 19,760 masonry wells, with boring and persian wheel at Rs.2,000 each, will amount to Rs. 395.20 lacs. The total amount of subsidy at the rate of Rs. 475 on each masonry well with boring and persian wheel will be Rs. 93.86 lacs.

Thus the total amount of loan and subsidy will be Rs. 567.16 lacs and Rs. 136.85 lacs respectively

Table II-B shows the position with regard to requirement of manures and fertilisers according to only 60 lbs. nitrogen per acre for the existing acreage under cane and the provisions made by the Cane Development Councils. With the inevitable increase in cane acreage for increased production of sugar the requirement would be even more.

It will be seen that the gross requirements for chemical fertilisers works out to 184,600 tonnes, for cake and sterameal to 138,450 tonnes and green manure seed 6,941 tonnes. At present the cultivators are using only 92,300 tonnes of chemical fertilisers, 69,223 tonnes of cake and sterameal and 2,100 tonnes of green manure seed through the Cane Unions.

Additional requirement of fertilisers should not require any financial assistance as the cost of fertiliser is payable by the Cane Unions in 18 months from the date of receipt and the Union should be able to distribute the fertiliser and recover the amount from the cultivators within this period. Funds will, however, be required for additional quantity of cakes and sterameal. For 69,227 tonnes of these manures a total loan of about Rs. 255 lacs will be needed. Funds for distribution of 4,841 tonnes of green manure seeds will amount to about Rs. 20 lacs. Thus additional requirement of funds will amount to Rs. 275 lacs only.

Table II-C shows the requirement of seed. It will be seen that out of 25,84,400 tonnes of actual requirement of seed for West U.P. factories that arranged by the Cane Societies is only 516,880 tonnes. The balance 20,67,520 tonnes is met by the growers themselves.

The Cane Development Department has been keeping one per cent of the plant cane under seed nurseries. From the season 1963-64 this area is being doubled. Nurseries will now be kept in 2 per cent area to meet the seed requirement of 20 per cent of the area under plant cane. The cane growers will themselves raise cane seed from the remaining 80 per cent area. In this way total cane seed can be replaced in 5 years time. Funds required for the distribution of cane seed will be provided by the Cane Unions but subsidy on about 15,000 acres of additional nurseries @ Rs. 30/- per acre *i.e.* Rs. 4.5 lacs will have to be found. In addition cane seed subsidy on about 257.5 thousand tonnes additional cane seed @ Rs. 6.70 per tonne (25 paise per maund) *i.e.* Rs. 17.25 lacs will be needed. Total subsidy requirement in addition to the present allotment will thus be Rs. 21.75 lacs yearly.

2.4 Means of communications

Table II-D shows the position with regard to the means of communications at present available in respect of *pucca* roads. Further requirements in respect of *pucca* roads, bridges and culverts are also shown. Though the figures are near estimates, they are enough to indicate roughly the magnitude of requirements.

It will be seen that only 3,725 Km. roads exist in the factory areas. Minimum additional requirement of the factory zones is 2,513 Km. of *pucca* road. This will cost Rs. 1,382.15 lacs at Rs. 55,000/- per Km.

As regards bridges about 184 big bridges will be required and if the cost is estimated on an average at Rs. 60,000 per bridge, the total cost will be Rs. 110.40 lacs. Cost of 5,890 culverts at Rs. 3,000/- each will come to Rs. 176.70 lacs. Thus the total estimated cost of all the works will be Rs. 1,669.25 lacs.

सत्यमेव जयते

2.5 Duration of season, cane crushed, sugar made and average recovery

The position with respect to average duration of season, cane crushed, sugar produced and average recovery recorded during the preceding ten years is as follows :

Year	Average duration (22 hrs.)	No. of working factories	Cane Crushed (lac tonnes)	Sugar made (lac tonnes)	Average recovery % cane
1953-54	112	34	39·93	3·94	9·86
1954-55	165	36	63·80	6·10	9·57
1955-56	193	36	76·49	7·35	9·60
1956-57	182	36	77·99	7·64	9·81
1957-58	138	36	68·40	6·30	9·94
1958-59	113	37	57·73	5·48	9·49
1959-60	161	37	85·46	8·29	9·70
1960-61	182	38	101·29	9·59	9·47
1961-62	157	38	87·64	8·10	9·24
1962-63	111	39	63·62	6·06	9·53

NOTE :—This include data in respect of Experimental Sugar Factory also.

It will be seen that the average duration of season except in three years of the last ten years has been generally high. The cane crushed has reached 101.29 lac tonnes and sugar made 9.59 lac tonnes in 1960-61. The average recovery has been above 9.47 per cent except in 1961-62 and has recorded a figure of 9.94 in 1957-58.

2.6 Sugar production

The position with regard to the number of working factories, their registered capacity, production of sugar and productivity per 100 tonnes of registered capacity is shown in the following table :

Year	No. of working factories	Total registered cane crushing capacity per day in tonnes	Production of sugar (tonnes)	Production of sugar per 100 tonnes registered capacity (tonnes)
1	2	3	4	5
1950-51	35	39,914	373,967	936·9
1951-52	35	39,914	582,119	1,458·4
1952-53	35	39,914	418,093	1,047·5
1953-54	[illegible]	38,898	393,804	1,012·4
1954-55	36	41,742	610,266	1,462·0
1955-56	36	42,919	734,855	1,712·2
1956-57	36	45,619	764,447	1,675·7
1957-58	36	46,127	630,226	1,366·3
1958-59 . . .	37	49,790	547,778	1,100·2
1959-60	37	50,022	828,654	1,656·6
1960-61	38	54,460	959,054	1,828·2
1961-62	38	53,679	809,793	1,508·6
1962-63	39	55,102	606,484	1,100·6

NOTE.—The above figures include the data of the 35 tonnes Experimental Sugar Factory of the National Sugar Institute, Kanpur).

It will be seen that the maximum production has been 9.59 lac tonnes in 1960-61. The production in 1962-63 came down to 6.06 lac tonnes. The maximum production per 100 tonnes of registered capacity was 1,828.2 tonnes in 1960-61.

2.7 The age of the factory plants, their capacities and present condition of equipment

The following table shows the age of the various plants in 1963, their capacities and the maximum crushing rate per 24 hours operation obtained by them in 1961-62 or 1962-63.

Sl. No.	Name of Factory	Year of Establishment	Age in 1963 (years)	Existing daily cane crushing capacity in tonnes (licensed) 1963-64 season	Actual maximum crushing rate per 24 hrs. operation attained in 1961-1962 or 1962-63 (tonnes)
1	2	3	4	5	6
1.	Doiwala	1930	33	528	587
2.	Aira	1938	25	660	961
3.	Rosa	1905	58	737	886
4.	Neoli	1933	30	1,270	1,075
5.	Bagpat	1960	3	1,016	1,312
6.	Bareilly	1932	31	1,016	1,123
7	Buland	1934	29	1,016	1,184
8.	Panninagar*	1954	25	1,016	1,312
9.	Bijnor	1934	29	1,067	1,014
10.	Modinagar	1933	30	1,067	1,199
11.	Sakhotitanda	1933	30	1,118	1,127
12.	Mohiuddinpur	1935	28	1,158	1,000
13.	Raza	1933	30	1,168	1,234
14	Bazpur	1958	5	1,219	1,367
15.	Meerut	1944	19	1,219	1,313
16.	Sarsawa†	1961	30	1,219	683
17.	Amroha	1946	17	1,255	1,611
18.	Baheri	1933	30	1,300	1,329
19.	Saharanpur	1938	25	1,321	1,325
20.	Rohanakalan	1933	30	1,372	1,560
21.	Daurala	1932	31	1,422	1,885
22.	Kashipur	1937	26	1,524	1,377
23.	Lhaksar	1933	30	1,524	1,727
24.	Maholi	1932	31	1,524	1,325
25.	Raja-ka-Sahaspur	1940	23	1,524	1,516

1	2	3	4	5	6
26.	Deoband	1933	30	1,626	2,616
27.	Pilibhit	1933	30	1,778	2,157
28.	Hardoi	1935	28	1,829	1,828
29.	Iqbalpur‡	1954	23	1,829	1,931
30.	Mansurpur	1932	31	1,829	2,083
31.	Dhampur	1933	30	2,032	1,925
32.	Khatauli	1933	30	2,032	2,180
33.	Simbhaoli	1933	30	2,032	1,933
34.	Hargaon	1933	30	2,642	2,491
35.	Mawana**	1949	30	3,048	1,523
36.	Shamli	1933	30	3,048	2,931
37.	Seohara	1933	30	3,251	3,054
38.	Gola	1932	31	3,658	3,817

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* The Panninagar plant is the old plant of Gokulnagar (District Nainital) which was established in 1938-39.

† The Sarsawa plant is the old plant of Nawabganj factory (East U.P.) which was established in 1933-34.

‡ The Iqbalpur plant is the old plant of Hamira Factory (Punjab) which was established in 1940-41.

** The Mawana plant is the oldplant of Barhni Sugar Mills, which was established in 1933-34.

It will be seen from the above that majority of the plants, except the two co-operative factories, *viz.* Bazpur and Bagpat, are over 25 years old, the oldest Rosa, being 58 years old. Most of them are carrying on with heavy repairs and renewals.

The distribution of factories in the various capacity groups is as follows :

Upto 800 tonnes	3
Between 801 to 1200 tonnes	10
Between 1201 to 2000 tonnes	17
Above 2000 tonnes	8

It will be seen that only three factories have been established in the region in recent years all the three being in the Co-operative Sector. Of these two are new factories and one is old plant sold by the Nawabganj Sugar Mills Co., Nawabganj (Gonda) which possessed two plants. There has been

सत्यमेव जयते

some expansion in the crushing capacity of some of the existing factories but such expansions have not been done in a very satisfactory manner.

The layout in many cases lacks modern features. The arrangement of machinery is not streamlined and due to expansions it has become congested in many cases. Most of the plants being steam driven have a net work of pipes all over, which have made them inconvenient for operation affecting output and efficiency. They present a striking contrast to the modern streamlined plants.

Details of factory equipment installed in the factories are given in Tables III-A, III-B and III-Ci, ii, iii & iv.

Out of the 38 factories, 10 factories have got double tandems while the rest of the factories have single tandems. Except the two new co-operative factories, all others are old plants. Excepting a few cases, the power in the mill engines is generally adequate. Seven factories have single knife sets while the rest have double sets. All the knife sets are adequately powered. Only one plant namely Deoband is turbine driven while the others are steam engine driven.

Table III-B will show that out of 38 plants 5 are fully steam driven, 7 are partially electrified and the rest 26 plants are semi-electrified. Most of the factories have a large number of small boilers. Except 9 factories which have boilers of 200 to 280 p.s.i. pressure, all others have boilers of low working pressure ranging from 120 lbs./sq. in. to 170 lbs./sq. in. as against the modern boilers of 280-300 p.s.i working pressure. Superheaters and economisers are generally absent and where provided are of inadequate sizes.

As regards the equipment in the boiling house, Tables III-Ci, ii, iii, and iv will show that out of 38 factories, 9 have manually operated weighing or measuring equipment, 4 factories' have horizontal type of juice heaters, vapour bleeding is practised only in about 15 factories, vapour line juice heaters are present only in 14 factories and sulphitation tanks in all except one are of batch type. Filtration is also of batch type in all sulphitation plants except 5 factories which have continuous filtration, 4 factories still have triple effect evaporators, 20 factories have coil pans to the extent of 6 to 41 per cent of the total pan capacity, 24 factories have adequate heat-exchanger capacity in low grade crystallisers, only 13 factories have high speed centrifugals and others have ordinary centrifugals. Even amongst the ordinary centrifugals most of them are small sized *viz.* 18″ × 30″ or 18″ × 36″.

2.8 Working results

The data with respect to (i) cane quality, (ii) time account (iii) recovery and total losses and (iv) fuel consumption are given in Tables IV-Ai, ii, iii, IV-Bi, ii, IV-Ci, ii, iii and IV-Di, ii respectively.

(i) *Cane Quality* : It will be seen from Tables IV-Ai, ii, & iii that the average seasonal pol per cent cane of 11.5—12.5 has generally been reported by most factories; primary juice purity variation is generally between 81.5 and 84.0.

Fibre per cent cane has generally varied between 14.5 to 16.5.

There appears therefore to be a considerable scope for improving the quality of cane. Efforts will have to be concentrated to develop cane varieties with still higher sugar content.

(ii) *Time Account*: Tables IV-Bi & ii give the time account. It will be seen that the duration of season in all factories has been in general 150-200 days except in the 1962-63 season when the duration fell down to about 100-140 days. The maximum duration of season has been in the case of Shamli factory for the season 1960-61 when it worked for 222 days.

The number of hours lost to total available has varied from 5.79 to 24.62 per cent. The normal time loss should not exceed 10-12 per cent but it will be seen that out of 29 factories who have supplied data, the time loss in the case of 15 factories is round about this figure but for the rest of the factories it is on the high side.

The above situation calls for an urgent need for renovation and modernisation of the plants.

(iii) *Recovery and Total Losses*: Tables IV-Ci & ii show the position of recovery and total losses. West U.P. has the highest concentration of carbonation factories. Of the 38 factories as many as 17 follow the carbonation process. It will be seen that the average seasonal recovery has been generally between 9.3 to 9.8 per cent cane. Total losses generally range between 2.2 to 2.7 per cent though a few factories have reported losses below 2.2 and above 2.7 per cent.

In the matter of reduced overall extraction, Table IV-Ciii will show that the number of factories in the various efficiency groups is as follows:

Red. overall extraction	No. of factories
Upto 82	Nil
Between 82 to 84	11
Above 84	18

It will be seen that out of 29 factories who have supplied data, 18 have recorded good efficiency and 11 factories have average or medium efficiency.

(iv) *Fuel Consumption*: Tables IV-Di & ii give the position with regard to fuel consumption. The fuel consumption has varied from 30 to 38 per cent in terms of bagasse. The factories who have consumed extra fuel are Doiwala, Mohiuddinpur, Kashipur, Panninagar, Sarsawa, Modinagar, Amroha, Saharanpur, Rohanakalan, Raja-ka-Sahaspur, Dhampur and Shamli. Others are either self-sufficient or have saved some bagasse.

A study of the foregoing paragraphs in regard to condition and nature of plant and equipment and the working results will show that most of the plants require a considerable degree of modernisation and expansion.

2.9 **Rehabilitation, modernisation and expansion envisaged**

Table V gives particulars of existing capacity and the expansion envisaged in capacities by the factories themselves. Financial requirements for expansion and for modernisation as estimated by the factories are also given.

2.10 **Labour strength and productivity**

Table VI-A shows the labour strength actually employed, the labour considered surplus in the existing conditions and the labour that would become surplus when schemes of modernisation become effective. Out of the 26 factories which have supplied data, at present there are 258 skilled and semi-skilled (in 8 factories) and 641 unskilled (in 9 factories) surplus labour which after modernisation would become 336 skilled and semi-skilled (in 10 factories) and 1,713 unskilled (in 13 factories). Thus it will be seen that there is considerable surplus labour even under the existing conditions.

Table VI-B shows the productivity of each factory in terms of man days per tonne of sugar for four years. Out of 26 factories the productivity in the case of 10 factories is low ranging from 13.0 to 17.5 man days per tonne of sugar whereas the reasonable figure is 9 to 12 man days per tonne of sugar. This shows that the labour strength in these factories is higher than desirable from economic considerations.

2.11 **Utilisation of bye-products**

Tables VII-A, VII-B & VII-C show the position with respect to utilisation of bye-products.

It will be seen that out of 29 factories who have supplied data, only about 10 factories are saving bagasse and selling it for paper and pulp manufacture. All other factories used up their entire production of bagasse as fuel.

Molasses is almost entirely used for the production of industrial alcohol.

Out of 38 factories, 21 factories are sulphitation and 17 are carbonation factories. The press mud of sulphitation factories is given to cultivators for manurial purposes either free of cost or at nominal price. The press mud of carbonation factories at present has no utilisation and its disposal is a problem to the factories.

3. ECONOMIC ASPECTS

3.1 **Financial set-up**

The nature of ownership, the share capital, the reserves and net worth of the 37 West U.P. sugar factories (excluding Experimental Factory at Kanpur and Co-operative Factory at Sarsawa) as given in their Balance Sheets for 1961-62, are as follows:—

(In lacs of Rupees)

Name of Factories	Paid up capital			Reserves	Total net worth
	Original	Bonus issues	Total		
1	2	3	4	5	6
(i) *Public Limited*					
1. Aira	15·00	..	15·00	16·68	31·68
2. Rosa	32·00	8·00	40·00	47·06	87·06
3. Buland 4. Raza	49·40	15·60	65·00	26·58	91·58
5. Modinagar	24·00	49·39	73·39	45·42	118·81
6. Meerut	30·00	..	30·00	32·99	62·99
7. Baheri	37·50	..	37·50	22·95	60 45
8 Saharanpur	12·00	..	12·00	24·86	36·86
9. Rohanakalan	8·00	18·00	26·00	33·61	59·61
10. Daurala 11. Mawana	Separate accounts not available for sugar business				
12. Deoband	36·19	31·23	67·42	21·32	88·74
13 Hardoi	10·00	20·00	30·00	26·52	56·52
14. Iqbalpur	25·00	..	25·00	14·18	39·18
15. Mansurpur	15·00	..	15·00	22·51	37.51
16 Dhampur	14·00	..	14·00	4·33	18·33
17. Khatauli	32·12	7·06	39·18	47·96	87·14
18 Hargaon	39·42	38·07	77·49	92·65	170·14
19. Shamli	66·72	10·00	76·72	50·22	126·94
20. Seohara	35·00	..	35·00	67·35	102·35
21. Gola	5·00	120·00	125·00	103·81	228·81
	486·35	317·35	803·70	701·00	1504 ·70

सत्यमेव जयते

1	2	3	4	5	6
(ii) *Private Limited*					
1 Neoli . .	36·41	..	36·41	4·70	41·11
2. Bareilly . .	2·00	15·00	17·00	1·37	18·37
3. Sakhotitanda .	10·00	...	10·00	..	10·00
4. Kashipur .	42·41	...	42·41	9·05	51·46
5. Lhaksar . .	12·50	2·50	15·00	35·79	50·79
6. Maholi . .	38·90	..	38·90	3·08	41·98
7 Pilibhit .	36·88	3·12	40·00	23·85	63·85
8. Simbhaoli .	9·60	...	9·60	12·11	21·71
	188·70	20·62	209·32	89·95	299·27
(iii) *Co-operatives*					
1. Bagpat .	43·60	...	43·60	6·85	50·45
2 Bazpur . .	68·06	...	68·06	14·61	82·67
	111·66	..	111·66	21·46	133·12
(iv) *Partnerships*					
1. Doiwala . .	22·43	...	22·43	..	22·43
2. Panninagar .	5·68	...	5·68	5·02	10·70
3. Bijnor . .	18·76	...	18·76	2·12	20·88
4. Mohiuddinpur .	14·33	..	14·33	1·44	15·77
5 Amroha .	5·33	..	5·33	..	5·33
6. Raja-ka-Sahaspur	46·20	..	46·20	..	46·20
	112·73	...	112·73	8·58	121·31
TOTAL . .	899·44	337·97	1237·41	820·99	2058·40

It will be seen that out of the share capital of Rs. 12.37 crores, Rs. 3.38 crores has been subscribed as bonus shares, the remaining amount of Rs. 8.99 crores being the originally paid up capital. At the close of 1961-62, a sum of Rs. 8.21 crores was also available in reserves, bringing the value of total net worth to Rs. 20.58 crores. Thus the profits so far retained by the West U.P. industry in the form of bonus shares and reserves aggregate Rs. 11.59 crores which means an addition of 129 per cent to the initially paid up capital.

Financial analysis* has been made by this Committee for the years 1953-54, 1957-58 and 1961-62, on the basis of Balance Sheets received from sugar factories and the results are shown below :—

(Amounts in lacs of Rs.)

Particulars	1953-54	1957-58	1961-62	Comparative development	
				1957-58 over 1953-54	1961-62 over 1957-58
1	2	3	4	5	6
1. No. of units† .	30	33	35	+3	+2
2. Gross block .	1564·41	2878·77	3713·81	1314·36	835·04
3. Accumulated depreciation . .	811·57	1295·34	1874·67	483·77	579·33
4. Net block .	752·84	1583·43	1839·14	830·59	255·71
5. Net worth . .	1175·30	1619·27	2058·40	443·97	439·13
6. Surplus of net worth over net block . .	422·46	35·84	219·26	—386·62	183 .42
7. Debentures & long term loans .	146·79	250·55	399·76	103·76	149·21
8. Available resources	569·25	286·39	619·02	—282·86	332·63
9. Investment	170.32	125·93	179·75	—44 39	53·82
10. Investment as % of surplus net worth	40·3	351·3	82·0		
11. Net block as % of gross block .	48·1	55·0	49·5		

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* Similar to the analysis made by the Tariff Commission in paragraph 15.5 of their report on the cost structure of sugar (1959).

† Excludes Experimental Sugar Factory, Kanpur. For the year 1953-54, the data is in respect of 30 units only as against 33 working factories. It includes Iqbalpur factory which was under construction and in the process of shifting from Hamira and Gokulnagar factory which did not work and was in the process of shifting to Bulandshahr, and excludes Bijnor, Sakhotitanda, Neoli, Mawana and Daurala factories who have not supplied data. For the year 1957-58, data is in respect of 33 units as against 35 working factories. It includes Bazpur factory which was under construction and excludes Bijnor, Mawana & Daurala factories who have not supplied data. For the year 1961-62 the actual information is in respect of 35 factories only as against 37 working factories, the data for Mawana & Daurala factories is not available.

It will be seen that at the close of 1961-62, out of Rs. 20.58 crores net worth, a sum of Rs. 18.39 crores stood blocked up in plant, machinery and buildings, leaving a surplus of Rs. 2.19 crores at the industry's disposal. A sum of Rs. 4.0 crores was obtained by the industry by way of debentures and long term loans, thus augmenting its total available resources to Rs. 6.19 crores. The industry also invested a sum of Rs. 1.80 crores in the form of shares and debentures of associate and other companies and in Government securities, leaving a sum of Rs. 4.39 crores to be used mostly as working capital.

These figures are also indicative of the development that has taken place during the last eight years, though the data are not exactly comparable due to non-availability of some Balance Sheets in respect of previous years. It will appear that during the period of 4 years ending 1961-62, the industry has made a gross investment in fixed assets of the order of Rs. 8.35 crores as against Rs. 13.14 crores in the preceding 4 years. The fixed assets stood depreciated to the extent of about 50 per cent of the value of gross block. The value of net block increased by Rs. 2.56 crores during the period of last four years, as against which net worth has increased by as much as Rs. 4.39 crores. The industry has also drawn upon additional long term borrowings to the tune of Rs. 1.49 crores during the last 4 years.

The foregoing analysis would show that on the whole there has been considerable efforts towards the development of the industry in West U.P. during recent years.

सत्यमेव जयते

	(1)	(2)	(3)
Factories making profit			
Number	27	27	28
Average profit per year per factory (in lacs of Rs.)	5·41	5·38	5·35
(iii) *Total*			
Number	30	32	32
Average profit per year per factory (in lacs of Rs.)	4·58	4·42	4·51

Table VIII-C shows the dividends paid by West U.P. factories since 1952-53. It will be seen that on the whole good profitability has enabled most of the West U.P. factories to declare handsome dividends each year on the ordinary paid up capital.

4. SPECIFIC PROBLEMS OF SUGAR FACTORIES

1. Doiwala

1. Old out-dated plant.
2. Previously there was no diversion of cane to *gur* and *khandsari*, but now it is increasingly coming up.
3. Varietal imbalance. Early maturing varieties are required.

सत्यमेव जयते

4. Neoli

1. Diversion of cane for *gur* and *khandsari* manufacture to the extent of 30 per cent.
2. Paucity of communications.
3. High labour load.

5. Bagpat

1. A new co-operative factory is going to be put up at Baraut which is hardly 10 miles from the factory. This will seriously affect the cane supplies of the Bagpat factory.

6. Bareilly

1. Being situated in city, 4 to 5 miles radius area has no cane.
2. Bareilly is a *khandsari* area, hence diversion of cane for *gur* and *khandsari* manufacture.
3. Means of transport are inadequate.
4. Drainage is very poor.

7. Buland and Raza

1. Extra labour load to the extent of 15 to 20 per cent.
2. Poor availability of cane in terms of quality and quantity.
3. Growers being poor cannot afford transport. Middle men come in and the grower gets only 50 per cent of the price.
4. Cane availability will be much reduced with the working of Kichha factory.
5. Local taxes in Rampur are very high and should be reduced.
6. Borer is a great menace in the area.
7. Communications are poor.
8. There are many small rivers over which the construction of culverts and bridges is urgently required.
9. Appreciable incidence of disease and pests.

8. Panninagar

1. Diversion of cane to *gur* and *khandsari.*
2. 60 per cent ratoon cane.
3. Communications are inadequate.
4. Additional irrigation facilities, *i.e.*, tubewells and masonry wells are required.

9. Modinagar

1. Serious competition from *gur* and *khandsari* manufacture.

10. Sakhotitanda

1. Low recovery.
2. Heavy steam consumption.

11. **Mohiuddinpur**
    1. Diversion of cane to *gur* and *khandsari.*
    2. Utilisation of sugarcane tops as fodder by growers.
    3. Low yield of sugarcane.
    4. Approach roads are lacking.
    5. Additional irrigation facilities required.
12. **Bazpur**
    1. Growers are not happy because of deductions. I.F.C. loan should preferably be paid out of profits.
    2. Require tubewells for irrigation.
    3. Communications are also needed.
    4. Limited transport arrangement.
    5. Diversion of cane for *khandsari* manufacture.
13. **Meerut**
    1. Major problem is that of cane supply. Bagpat factory is the greatest bottleneck for Meerut.
    2. Difficulty in getting cement and bricks for cane development work.
14. **Sarsawa**
    1. Require adjustment of cane area with Saharanpur factory.
    2. Require additional irrigation facilities.
    3. Power should be made available for private tubewells owners.
    4. Communications (two roads) are required.
15. **Amroha**
    1. Diversion of cane for *gur* and *khandsari* manufacture.
    2. Poor communications.
16. **Baheri**
    1. Problem of poor cane supply because of diversion of cane for *gur* and *khandsari* manufacture.
    2. Transport difficulties.
    3. Frequent diversion of road centres, in the season, to other factories.
17. **Saharanpur**
    1. Difficulty in getting import license for essential items.
    2. Want allocation of pig iron to sugar factories, for their normal casting requirements.
    3. Fall in recovery from year to year.
    4. Problem of drainage.
    5. High labour load.
18. **Rohanakalan**
    1. Recovery is low and is decreasing every year.
    2. Water table has gone up due to which the quality of cane has fallen.
    3. Existing drainage conditions are not proper.
    4. Shortage of tubewells and surface wells.
    5. Mainly Co 312 is grown which is highly affected by pests and diseases.

6. High labour load.
7. Diversion of cane for *gur* and *khandsari*.

19. Daurala and Mawana

1. Inadequate irrigational facilities.
2. Paucity of roads.
3. Diversion of cane for *gur* and *khandsari* manufacture.

20. Kashipur

1. Cane area is vast and 80 lac maunds of cane is available, but due to short capacity cannot crush and hence expansion is required.
2. Diversion of cane for *gur* and *khandsari* manufacture.
3. Allotment of reserved area cane to other sugar factories.

21. Lhaksar

1. Lack of communications.
2. Additional irrigational facilities in the form of canals.
3. Drainage is a problem which requires immediate attention.
4. High labour load.
5. Availability of brass tubes is a problem.
6. Faced with the problem of effluent treatment and disposal.
7. Varietal imbalance.
8. Diversion of cane for *gur* and *khandsari* manufacture.
9. Low yield per acre.

22. Maholi

1. Non-availability of cane due to diversion of cane for *gur* and *khandsari* manufacture.
2. Old plant and machinery.
3. High labour load.
4. Roads are not in good condition.

23. Raja-ka-Sahaspur

1. Diversion of cane for *gur* manufacture.
2. Local taxes (Rs. 2 per truck load which works out to 2 paise per maund). Besides this, there is toll tax which is not refundable.
3. High fuel consumption.
4. Lack of scientific methods of cultivation and development.
5. High labour load.

24. Deoband

1. Require modernisation of factory for which assistance from Government is needed.
2. Paucity of main roads and feeder roads.
3. Diversion of cane to crushers and *Kolhus*.
4. Lack of early varieties.

25. Pilibhit

1. High labour load.
2. After coming up of Majhola factory, cane supply may fall short.
3. Too much of rail cane.

4. For developing road centres, too many roads will be required.
5. Diversion of cane for *gur* and *khandsari* to the extent of 50 per cent.

26. Hardoi

1. Whole area is under canal command but there is no water and most of the canals are the tail ends.
2. More than 30 per cent cane growers supply below one cart which is a great handicap in the development activities.
3. Very less gate area which could not be developed because of the factory being situated in the city.
4. Several competitive crops such as potato, groundnut and even food grains.
5. Diversion of cane for *gur* and *khandsari.*
6. Poor yield.
7. Poor communications.

27. Iqbalpur

1. Problem of diversion of cane for *gur* and *khandsari* manufacture.
2. Lack of communications.
3. Gate area has no irrigation facilities.
4. Varietal position is not satisfactory.

28. Mansurpur

1. Funds placed at the disposal of the Cane Development Councils are very inadequate.
2. Borer is a problem in the area.
3. Difficulty in getting power for tubewells which is not given in the canal command area although there is scarcity of water.
4. Require funds for renovation of buildings and godowns.
5. Heavy diversion of cane for *khandsari* manufacture.

29. Dhampur

1. Short season of only three months.
2. Diversion of cane for *gur* and *khandsari* manufacture.
3. Have to partly depend on hydel power and even the centrifugal station is worked on hydel power.
4. Extra fuel consumption (live steam has to be taken for process due to hydel power).

30. Khatauli

1. Communications are required so that cane can be drawn from isolated pockets.
2. Hastinapur factory when established will affect the cane supply of the factory.
3. Diversion of cane for *gur* and *khandsari.*
4. Lack of feeder roads.
5. Non-availability of sufficient water in the factory area for irrigation.
6. Ignorance in the use of plant protection measures on the part of the growers.

31. Simbhaoli

1. Main problem is short cane supply.
2. Diversion of cane for *gur* manufacture.

3. Low recovery due to poor quality of cane.
4. Difficulty in feeding during night as only day weighment of carts is allowed.
5. High loss in bagasse due to poor feeding of cane.
6. Labour load is high.
7. 97 per cent of the cane variety is Co 312 which is an unapproved variety.
8. Lack of roads.

32. Shamli

1. Cane is diverted, particularly good quality, to *gur* making and poor quality cane comes to factory.
2. Area inadequately irrigated.
3. Problem of drainage.
4. Problem of communications.
5. Shamli area cane is diverted to Bagpat and Mansurpur. The area should be permanently earmarked so that development work may be done.
6. No soil survey is done, hence low yields.
7. Proposed factory at Nanauti will badly affect the working of Shamli factory.
8. Some important items of machinery could not be obtained due to foreign exchange difficulties.
9. Extra fuel consumption.
10. Low recovery.

33. Seohara

1. Original capacity 400 tons. Present capacity 3600 tons. Modernisation is the basic need.
2. Only 30 to 40 per cent area is irrigated.
3. Diversion of cane for *gur* and *khandsari* manufacture.
4. Day-to-day indents of cane are not fulfilled by cane societies.
5. Transport of road centre cane is a problem as transporters dictate their own terms.

34. Gola

1. Due to non-availability of foreign exchange, at the time of expansion, some machinery which is now outmoded had to be installed which is giving poor efficiency and multiplicity of the units with high maintenance cost.
2. In Gola area Shahjahanpur seed could not stand because the area is water-logged.
3. In communications the area is very backward.
4. Difficulty in transport of sugar. Factory wants to have a godown at Shahjahanpur to take advantage of broad gauge. They also want to purchase one diesel locomotive which will solve their transport problem.
5. Requires large number of state tubewells for irrigation.

सत्यमेव जयते

5. RECOMMENDATIONS

Though the climate is not very favourable the soil is very fertile. The cultivators are hardy and keen to take up improved methods of agriculture. Sugarcane has been grown as a cash crop over extensive areas and an indigenous sugar industry supplying *gur* and *khandsari* sugar even to other states has existed for several decades. While Meerut and Muzaffarnagar areas have been famous for their good quality *gur* production, the Rohilkhand area has been and still is the largest centre of *khandsari* sugar production in the country.

In spite of winter season being severe and the growth period of sugarcane being small, average yields of about 15 tonnes per acre are being obtained. In progressive farms, yields of even 25-30 tonnes have been obtained. The cane quality is rather poor, particularly that supplied to factories, due largely to abundance of old and rejected cane varieties and lack of good early and mid-ripening varieties and good quality cane being used for *gur* manufacture. Some cane areas are affected by red rot and other diseases and borer attack and some have problems of water-logging thus affecting quality adversely.

Cane supplies to white sugar factories have suffered from vicissitudes of over and under supplies depending on whether *gur* prices have been low or high. In years of low *gur* prices, *gur* manufacture is not remunerative and the factories get abundant supplies, so much so that they are unable to crush it in the available duration but when *gur* prices so high white gur factories have to starve for cane. This is the greatest problem of white sugar industry in West U.P.

As regards facilities for cane development, except in certain areas, the irrigational needs are not being met fully and the distribution of manures and fertilisers is also lacking. Means of communication are also lacking considerably.

On the factory side most of the factories are more than 30 years old and need considerable degree of modernisation. Although the general capacity level is somewhat high, there are still quite a few factories which are below the economic capacity level and need, not only modernisation but expansion also.

In regard to by-product utilisation, there is considerable potential for saving bagasse and establishing paper factories. There is some problem of surplus labour.

As regards the economic aspects, most of the West U.P. factories have shown fairly good profitability.

In the light of the above, the recommendations of the Committee are as follows :—

1. Rehabilitation, modernisation and expansion

As the present Northern Indian average capacity taken for price fixation purposes is about 1200 tonnes, the Committee considers that the capacity of 1500 tonnes should be considered the economic capacity. For a long time to come the average will not exceed the figure of 1500 tonnes. Thus while the Committee considers that every factory below 1500 tonnes should be expanded to 1500 tonnes, under the present situation it would be expedient to carry out expansions to such an extent as would be permitted by the existing milling plants. In others the expansions would be such as might become inevitable in the process of modernisation or where cane potential is such as to make expansion a compelling necessity. The Raza and Buland factories within half a mile of each other and under the same management present a good case for merger and expansion. With the marger it should be possible to have a single unit of 3000 tonnes capacity with a future potential for 4000 tonnes. In consideration of these points, the Committee's recommendations in regard to expansion are set forth in the following table :—

Sl. No.	Name of Factory	Existing daily cane crushing capacity (tonnes) 1963-64 season	Capacity upto which extension license already granted (tonnes)	Expansion as envisaged by the factories (tonnes)	Expansion as recommended by the Committee (tonnes)
1	2	3	4	5	6
1.	Doiwala . .	528	1,000	1,500	1,000 ✓
2.	Aira . .	660	1,200	N.A.	1,200
3.	Rosa . .	737	1,000	1,200	1,200
4.	Neoli . .	1,270	...	2,250	1,400
5.	Bagpat . .	1,016	1,600	N.A.	1,600
6.	Bareilly . .	1,016	...	N.A.	..
7	Buland . .	1,016	1,500	1,500	1,500
8.	Panninagar	1,016	1,500	3,000	1,800
9.	Bijnor .	1,067	..	N.A.	..
10.	Modinagar	1,067	..	3,000	1,200
11.	Sakhotitanda	1,118	1,400	N.A.	1,400
12.	Mohiuddinpur	1,158	..	Nil	Modernisation only
13.	Raza .	1,168	1,500	1,500	1,500
14.	Bazpur .	1,219	1,600	2,000	1,800
15.	Meerut . .	1,219	..	N.A.	...
16.	Sarsawa . .	1,219		Nil	Modernisation

1	2	3	4	5	6
32.	Khatauli	2,032	2,300	N.A.	2,300
33.	Simbhaoli	2,032	..	N.A.	—
34.	Hargaon	2,642	3,000	N.A.	3.000
35.	Mawana	3,048	..	Nil	..
36.	Shamli	3,048	3,750	N.A.	3,750
37.	Seohara	3,251	3,600	3,600	3,600
38.	Gola	3,658	5,000	N.A.	5,000
		59,894			75,044

The Committee has estimated the total cost of rehabilitation, modernisation and expansion for the above 31 factories (who have supplied the data) as Rs. 12.2 crores.

2. Cane development

(i) *Irrigation* :

There is a rich strata of underground water in the Indo-Gangetic plains and this can be tapped for irrigation purposes in most parts of Uttar Pradesh. Thanks to the introduction of the Ganga Canal Hydro-electric Grid Scheme by Sir William Stampe in 1934-35, a large number of deep tubewells have come up in West U.P. However area irrigated per cent total cultivable in West U.P. Factory zones is only about 27 per cent.

Sugarcane areas in Doiwala, Aria, Rosa, Bulandshahr, Kashipur, Sarsawa, Bazpur, Lhaksar, Hardoi, Iqbalpur, Khatauli and Shamli factory zones need additional irrigational factilities. Extension of channels and lining of *kachha* ones and proper maintenance and operation of existing tubewells appear to be urgently necessary. The State Government may examine these

There is thus urgent need for a thorough investigation of the varietal position, release of better varieties which are not susceptible to the above-named diseases and establishment of a large number of seed nurseries for distribution of healthy seed of suitable varieties. The Plant Protection Organisation also needs to be strengthened considerably.

(v) *Communications* :

As many as 2,513 Km. of *pucca* road, 184 bridges and 5,890 culverts are required to be constructed in West U.P. factory areas. The State Public Works Department may examine these requirements and give top priority to fulfilling their needs.

(vi) *Cane Supplies* :

The greatest problem of the West U.P. factories is the uncertainty of cane supplies due largely to diversion of cane for *gur* and *khandsari* manufacture. In some cases supplies have been affected due to arrears of cane price.

In regard to diversion of supplies for *gur* and *khandsari* sugar manufacture, the Committee is of the view that diversion for *khandsari* manufacture can be avoided by suitable legislative and administrative measures by seeing to it that the areas of operation of the two industries are kept wide apart. Narrowing down the gap of taxation on white sugar and *khandsari* sugar, so that *khandsari* cannot afford to compete with white sugar factories in the matter of cane price is another method by which diversion of cane for *khandsari* manufacture can be prevented. This will automatically result in *Khandsaries* operating in areas far remote from the areas of operation of white sugar factories where they can get the sugarcane at a cheaper price.

As regards diversion of cane for *gur* manufacture, the Committee is of the view that the only solution is to resort to long-term bonding, enforcing the obligations of bonding and giving cash advances to growers over and above the advances made in kind *i.e.* for seed, manures and fertilisers etc.

In regard to withholding of payment of cane price by certain factories, the Committee suggests that suitable deterrent action should be taken against such factories.

The Committee feels that the West U.P. region is on much better footing than any other region in Northern India, in as much as its capacity level is high, technical efficiency is fairly satisfactory, potential for cane cultivation is good and financial requirements for various improvements are comparatively much smaller and if only the problem of deficient cane supplies could be solved, the region would continue to be the major contributor to the sugar production in the country. Even with the expansion of the sugar industry in the other regions, the production of West U.P. has been 28 per cent to 34 per cent of the entire Country's production during recent years. The importance of this region in the Country's sugar production effort is high. Any factor which tends to upset the sugar production in this region will have its impact on all India production.

(vii) *Funds for Cane Development* :

At present the funds placed at the disposal of the Development Councils are drawn from 50 per cent of the proceeds from co-operative societies commission. The remaining 50 per cent is spent on establishment. The amount thus received is far too inadequate for development purposes. The Committee agrees that the present allocations for cane development purposes are very meagre. It is suggested that the State Government should carry out complete surveys in respect of developmental requirements and draw up blue prints in respect of each factory zone. Development work should then be phased over a period of five years and necessary finance made available from the revenue received from Purchase Tax.

(viii) *Reorganisation of Development Councils*:

It has been brought to the notice of the Committee that the Chairman of the Development Council is sometimes a person who has no direct interest in cane development and it would be desirable if Cane Development Councils are headed by the top executives of the factories concerned. The Committee agrees with this view and would commend it for the consideration of the State Government.

3. **Surplus labour:**

There is only one factory, *viz.* Pilibhit, in which the problem of surplus labour is rather acute. The State Government may examine if it can give any relief to this factory by employing the surplus labour in any public sector enetrprise.

4. **Utilisation of bye-products:**

(a) *Bagasse*:

Out of 26 factories who submitted information, 15 factories are reported to be saving bagasse. There are only two paper and board factories in the region, one at Meerut and the other at Saharanpur. The Meerut plant has also got an expansion license. Some of the saved bagasse is sold to these but for the rest there is no proper avenue of utilisation. It is learnt that the Gola factory is going to put up a chip-board plant in the near future. It appears there is scope for putting up two more paper or chip-board plants for utilising surplus bagasse of West U.P. factories, in addition to the one coming up at Gola. The possible locations for these two plants are (i) Mansurpur and (ii) Moradabad. A 10-ton carboard plant is proposed to be put up at Hardoi. This proposal should be persued.

(b) *Molasses*:

Most of the present production of molasses of West U.P. factories is being utilised for the production of alcohol which is being fully utilised in the synthetic rubber factory at Bareilly. Some part of the molasses production finds its way through normal trade channels for tobacco curing and for foundries.

There is clearly scope for the development of alcohol based industries and any surplus or increased production of molasses that will result on account of expansion of sugar factory capacities should be utilised for the production of alcohol. One of the points that was brought before the Committee was that the control price of molasses was too low even to cover the cost of proper storage and handling.

The Committee considers it necessary that the molasses should be stored properly in covered steel tanks, the storage capacity being 50 per cent of the production capacity. To this end the possibility of raising the control price of molasses should be investigated.

5. **Financed required :**

Financial requirements in West U.P. are estimated as follows :—

(Crores of rupees)

1	2	
(*i*) Development of irrigation (including loan and subsidy)	30·00	
(*ii*) Manures and fertilisers (additional) . . .	2·75	(loan)
(*iii*) Cane seed	1·09	
(*iv*) Communications	16·69	
(*v*) Rehabilitation, modernisation and expansion . .	12·20	(for 31 factories
TOTAL	62·73	

सत्यमेव जयते

TABLE I-A

Area Under Cane

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Area under cane (000 acres) 1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Doiwala	528	9·13	11·17	12·91	9·98
2.	Aira	660	26·10	35·00	34·40	29·75
3.	Rosa	737	31·07	32·92	37·61	30·64
4.	Neoli	1,270	27·85	34·21	36·19	32·52
5.	Bagpat	1,016	..	39·50	54·13	60·60
6.	Bareilly	1,016	34·19	42·52	45·12	41·45
7.	Buland (including Raza) .	1,016	60·65	67·97	87·25	68·37
8.	Panninagar . . .	1,016	42·09	41·13	43·03	55·50
9.	Bijnor	1,067	43·62	45·41	41·89	39·71
10.	Modinagar . . .	1,067	48·84	46·41	44·81	36·50
11.	Sakhotitanda . .	1,118	21·98	23·80	23·67	20·43
12.	Mohiuddinpur . .	1,158	28·19	26·58	25·44	25·65
13.	Raza	1,168	Given along with Buland factory			
14.	Bazpur	1,219	17·20	23·68	27·29	24·45
15.	Meerut	1,219	39·16	38·95	37·31	32·05
16.	Sarsawa . . .	1,219	..	..	..	9·26
17.	Amroha . . .	1,255	46·85	57·53	56·62	51·06
18.	Baheri	1,300	36·00	35·81	49·37	37·01
19.	Saharanpur . . .	1,321	38·23	44·67	46·07	33·55
20.	Rohanakalan . . .	1,372	22·81	31·26	34·41	26·82
21.	Daurala . . .	1,422	29·73	32·69	33·62	29·49
22.	Kashipur . . .	1,524	29·05	39·66	46·46	37·93
23.	Lhaksar . .	1,524	30·17	43·73	44·91	38·71
24.	Maholi	1,524	34·65	40·74	48·89	48·15
25.	Raja-ka-Sahaspur . .	1,524	48·70	53·68	52·68	48·57
26.	Deoband . . .	1,626	32·80	39·60	40·25	42·05
27.	Pilibhit	1,778	56·55	76·19	78·19	66·95
28.	Hardoi	1,829	39·63	43·68	51·31	46·79
29.	Iqbalpur . . .	1,829	35·88	48·83	58·12	47·80
30.	Mansurpur . . .	1,829	51·09	49·66	53·35	53·89
31.	Dhampur . . .	2,032	37·91	37·51	37·01	38·94
32.	Khatauli . . .	2,032	36·38	44·85	49·61	45·34

सत्यमेव जयते

TABLE I-A—*contd.*

1	2	3	4	5	6	7
33.	Simbhaoli	2,032	50·43	52·21	51·76	44·49
34.	Hargaon	2,642	60·33	89·32	93·93	80·20
35.	Mawana	3,048	36·34	36·17	33·75	39·16
36.	Shamli	3,048	50·01	72·65	63·52	67·14
37.	Seohara	3,251	68·06	77·92	80·89	77·10
38.	Gola	3,658	84·74	104·61	128·24	114·22
	TOTAL . .		1386·41	1662·22	1784·01	1632·22

SOURCE :—Office of the Cane Commissioner, U.P., Lucknow.

TABLE I-B

Estimated Yield of Cane Per Acre

Sl. No.	District	Name of Factory	Estimated yield per acre (tonnes)			
			1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Dehradun .	Doiwala	17·5	17·0	14·4	15·7
2.	Saharanpur .	Sarsawa Saharanpur Lhaksar Deoband Iqbalpur				
3.	Muzaffarnagar .	Rohanakalan Mansurpur Khatauli Shamli	19·8	19·7	17·5	15·4
4.	Bijnor . .	Bijnor Dhampur Seohara	18·9	17·2	17·3	15·0
5.	Meerut . .	Bagpat Modinagar Sakhotitanda Mohiuddinpur Meerut Daurala Simbhaoli Mawana	18·9	18·4	16·4	15·0
6.	Hardoi . .	Hardoi	18·8	13·8	13·4	11·8
7.	Bulandshahr .	Panninagar	19·2	18·4	14·5	14·6
8.	Nainital . .	Bazpur Kashipur	24·1	20·7	18·4	17·1

TABLE I-B—*contd.*

1	2	3	4	5	6	7
9.	Etah & Budaun	Neoli	14·4	7·7	9·9	13·0
10.	Moradabad .	Amroha Raja-ka-Sahaspur	20·6	19·2	15·3	14·7
11.	Rampur . .	Buland Raza	16·7	13·8	13·5	14·5
12.	Bareilly . .	Bareilly Baheri	19·4	15·9	17·2	14·0
13.	Pilibhit . .	Pilibhit	18·7	13·8	16·3	14·3
14.	Kheri . .	Aira Gola	15·9	12·5	13·5	12·7
15.	Shahjahanpur	Rosa	15·0	15·4	13·8	13·9
16.	Sitapur . .	Maholi Hargaon	14·0	13·2	13·7	13·5

SOURCE—Office of the Cane Commissioner, U.P., Lucknow.

TABLE I-C

Utilisation of Cane Crop for White Sugar

Sl. No.	Name of Factory	Per cent utilisation for white sugar			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	63·00	67·00	51·00	45·00
2.	Aira	73·00	76·00	74·00	73·00
3.	Rosa	39·00	36·00	33·00	37·00
4.	Neoli	45·00	38·00	31·00	28·00
5.	Bagpat	..	N.A.	N.A.	N.A.
6.	Bareilly	N.A.	N.A.	N.A.	N.A.
7.	Buland	N.A.	N.A.	N.A.	N.A.
8.	Panninagar	40·00	33·00	25·00	32·00
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	36·00	32·80	29·40	23·90
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	43·72	36·19	31·80	28·84
13.	Raza	N.A.	N.A.	N.A.	N.A.
14.	Bazpur	70·80	50·80	49·00	52·00
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	24·00
17.	Amroha	30·00	28·00	25·00	20·00
18.	Baheri	46·70	40·00	43·80	40·60
19.	Saharanpur	40·70	41·40	27·60	27·40
20.	Rohanakalan	52·27	44·03	30·68	26·80
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	75·90	76·30	71·50	64·00
23.	Lhaksar	N.A.	N.A.	N.A.	N.A.
24.	Maholi	53·89	47·54	39·13	35·01
25.	Raja-ka-Sahaspur . .	50·00	47·00	51·00	49·00
26.	Deoband	60·60	60·30	51·20	42·00
27.	Pilibhit	39·00	40·00	36·00	31·00

TABLE I-C—*contd.*

1	2	3	4	5	6
28.	Hardoi	52·00	44·00	38·00	34·00
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur . . .	63·00	62·00	37·00	29·00
31.	Dhampur	N.A.	N.A.	N.A.	N.A.
32.	Khatauli	54·00	49·30	39·00	31·34
33.	Simbhaoli	45·00	45·00	47·50	32·50
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	40·06	40·40	35·34	27·91
36.	Shamli	47·00	45·00	34·00	34·00
37.	Seohara	48·57	42·97	40·19	29·48
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A.=Not Available

SOURCE:—Factory Returns.

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of factory	Capacity (tonnes/ day)	Actual supplies made to the factories (000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Doiwala	528	95·9	119·2	107·7	74·1
2.	Aira	660	163·0	169·0	152·0	144·0
3.	Rosa	737	106·1	114·9	116·3	61·5
4.	Neoli	1,270	152·0	160·0	114·0	114·0
5.	Bagpat	1,016	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	1,016	161·8	181·0	173·4	126·8
7.	Buland	1,016	N.A.	N.A.	N.A.	N.A.
8.	Panninagar . . .	1,016	166·1	215·0	133·6	116·4
9.	Bijnor	1,067	N.A.	N.A.	N.A.	N.A.
10.	Modinagar . . .	1,067	177·8	191·7	136·4	105·5
11.	Sakhotitanda . .	1,118	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur . .	1,158	129·8	154·8	124·0	83·0
13.	Raza	1,168	N.A.	N.A.	N.A.	N.A.
14.	Bazpur	1,219	175·8	197·8	210·3	167·9
15.	Meerut	1,219	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa . . .	1,219	..	..	..	36·3
17.	Amroha . . .	1,255	259·1	304·1	224·2	155·1
18.	Baheri	1,300	219·5	219·4	237·3	179·2
19.	Saharanpur . . .	1,321	213·4	250·1	192·0	133·5
20.	Rohanakalan . . .	1,372	199·3	249·7	185·4	110·1
21.	Daurala . . .	1,422	N.A.	N.A.	N.A.	N.A.
22.	Kashipur . . .	1,524	250·0	262·0	256·2	189·5

TABLE I-D—*contd.*

1	2	3	4	5	6	7
23.	Lhaksar	1,524	212·0	280·0	228·0	168·0
24.	Maholi	1,524	210·0	224·5	225·7	157·6
25.	Raja-ka-Sahaspur	1,524	285·7	284·6	227·3	159·6
26.	Deoband	1,628	300·4	410·1	400·7	280·4
27.	Pilibhit	1,778	281·8	345·6	348·1	209·2
28.	Hardoi	1,829	201·0	219·0	235·0	149·0
29.	Iqbalpur	1,829	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	1,829	336·0	376·0	279·0	205·0
31.	Dhampur	2,032	233·3	249·2	206·5	161·7
32.	Khatauli	2,032	292·1	392·8	289·8	210·6
33.	Simbhaoli	2,032	242·0	303·0	239·0	175·0
34.	Hargaon	2,642	N.A.	N.A.	N.A.	N.A.
35.	Mawana	3,048	205·4	244·1	193·4	143·4
36.	Shamli	3,048	491·3	575·0	439·6	378·3
37.	Seohara	3,251	408·7	568·3	435·2	285·3
38.	Gola	3,658	N.A.	N.A.	N.A.	N.A.
	TOTAL		6169·3 (27 fys.)	7285·9 (27 fys.)	6110·1 (27 fys.)	4480·0 (28 fys.)

N.A.=Not Available
SOURCE: =Factory Returns.

TABLE I-E

Percentage of Gate, Road and Rail Cane and Number of Growers

Sl No	Name of Factory	Capacity (tonnes/ day)	per cent Gate cane	per cent Road cane	per cent Rail cane	No. of growers supplying cane to the factory (1962-63 season)
1	2	3	4	5	6	7
1.	Doiwala	528	61·2	31·2	7·6	3,638
2.	Aira	660	77·0	23·0	Nil	12,991
3.	Rosa	737	28·6	64·4	7·0	21,290
4.	Neoli	1,270	43·7	10·5	45·8	10,278
5.	Bagpat	1,016	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	1,016	41·2	37·8	21·0	19,088
7.	Buland	1,016	N.A.	N.A.	N.A.	N.A.
8.	Panninagar	1,016	55·0	45·0	Nil	12,532
9.	Bijnor	1,067	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	1,067	47·0	53·0	Nil	16,000
11.	Sakhotitanda	1,118	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	1,158	56·7	43·3	Nil	10,000
13.	Raza	1,168	N.A.	N.A.	N.A.	N.A.
14.	Bazpur	1,219	77·1	22·9	Nil	2,948

सत्यमेव जयते

TABLE I-E—*contd.*

1	2	3	4	5	6	7
15.	Meerut	1,219	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	1,219	85·8	14·2	Nil	3,360
17.	Amroha	1,255	23·0	51·0	26·0	38,122
18.	Baheri	1,300	87·5	12·5	Nil	15,305
19.	Saharanpur	1,321	30·6	69·4	Nil	17,655
20.	Rohanakalan	1,372	36·9	63·1	Nil	7,827
21.	Daurala	1,422	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	1,524	70·0	18·4	11·6	9,570
23.	Lhaksar	1,524	18·0	20·0	62·0	19,500
24.	Maholi	1,524	46·5	53·5	Nil	41,354
25.	Raja-ka-Sahaspur	1,524	60·0	40·0	Nil	42,500
26.	Deoband	1,626	38·4	48·8	12·8	15,350
27.	Pilibhit	1,778	45·2	15·0	39·8	39,210
28.	Hardoi	1,829	23·2	32·0	44·8	43,101
29.	Iqbalpur	1,829	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	1,829	52·0	42·0	6·0	14,573
31.	Dhampur	2,032	27·0	76·0	6·0	18,273
32.	Khatauli	2,032	63·1	36·9	Nil	8,900
33.	Simbhaoli	2,032	70·6	29·4	Nil	14,518
34.	Hargaon	2,642	N.A.	N.A.	N.A.	N.A.
35.	Mawana	3,048	64·1	35·9	Nil	10,504
36.	Shamli	3,048	55·0	19·0	26·0	19,590
37.	Seohara	3,251	35·6	32·3	33·1	N.A.
38.	Gola	3,658	N.A.	N.A.	N.A.	N.A.
	TOTAL					487,977 (27 fys.)

N.A.=Not Available

SOURCE:—Factory Returns.

सत्यमेव जयते

TABLE II-A

Area Irrigated and Requirements in Respect of Irrigation

Sl. No.	Name of Factory	Area irrigated per cent culturable	Requirements for irrigating balance area		
			State tubewells	Private tubewells	Masonry wells
1	2	3	4	5	6
1.	Doiwala	28	15	15	100
2.	Aira	4*	50	50	350
3.	Rosa	10	75	75	500
4.	Neoli	27	100	100	700
5.	Bagpat	66	33	33	240
6.	Bareilly	14	86	86	600

TABLE II-A—*contd.*

1	2	3	4	5	6
7. 8.	Buland Raza	7	150	150	1,000
9.	Panninagar	62	10	10	50
10.	Bijnor	12	100	100	700
11.	Modinagar	66	35	35	250
12.	Sakhotitanda	66	10	10	50
13.	Mohiuddinpur	66	20	20	150
14.	Bazpur	27	50	50	350
15.	Meerut	66	25	25	180
16.	Sarsawa	31	15	15	100
17.	Amroha	21	150	150	1,000
18.	Baheri	14	16	16	100
19.	Saharanpur	31	180	180	1,300
20.	Rohanakalan	59	24	24	170
21.	Daurala	66	24	24	170
22.	Kashipur	27	60	60	400
23.	Lhaksar	31	62	62	450
24.	Maholi	7	150	150	1,000
25.	Raja-ka-Sahaspur	21	150	150	1,000
26.	Deoband	31	82	82	600
27.	Pilibhit	10	150	150	1,000
28.	Hardoi	10	150	150	1,000
29.	Iqbalpur	31	150	150	1,000
30.	Mansurpur	59	42	42	300
31.	Dhampur	12	80	80	550
32.	Khatauli	59	46	46	350
33.	Simbhaoli	N.A.	N.A.	N.A.	N.A
34.	Hargaon	7	200	200	1,500
35.	Mawana	66	26	26	200
36.	Shamli	59	50	50	350
37.	Seohara	12	150	150	1,000
38.	Gola	4	150	150	1,000
	TOTAL	26·8	2,866	2,866	19,760

*No state irrigation facilities.

NOTES—(1) The requirements have been worked out on the basis of figures available from the Irrigation Deptt. and the Agriculture Department of U.P. and from those available from the factories and District Cane Officers.

(2) The number of state tubewells given above will cover 80 per cent, private tubewells will cover 10 per cent and masonry wells will cover the remaining 10 per cent of the area for full saturation.

(3) Figures are approximate and are only indicative.

SOURCE: Office of the Cane Commissioner, U.P., Lucknow.

TABLE II-B

Manures and Fertilizers

	Chemical fertilisers (tonnes)	Cake & sterameal (tonnes)	Green manure seed (tonnes)
(*i*) Total requirement	184,600	138,450	6,941
(*ii*) Provisions being made by Cane Organisations	92,300	69,223	2,100
(*iii*) Balance requirement (shown below factorywise)	92,300	69,227	4,841

Sl. No.	Name of Factory	Approximate area under cane (000 acres)	Balance requirement of manures and fertilizers (tonnes) Chemical fertilizers	Cake & sterameal	Green manure seed
1	2	3	4	5	6
1.	Doiwala	13·0	650	488	..
2.	Aira	35·0	1,750	1,312	81
3.	Rosa	38·0	1,900	1,425	113
4.	Neoli	36·0	1,800	1,350	93
5.	Bagpat	61·0	3,050	2,288	179
6.	Bareilly	45·0	2,250	1,688	94
7.	Buland }	87·0	4,350	3,262	176
8.	Raza }				
9.	Panninagar	56·0	2,800	2,100	150
10.	Bijnor	45·0	2,250	1,688	99
11.	Modinagar	49·0	2,450	1,838	134
12.	Sakhotitanda	24·0	1,200	900	40
13.	Mohiuddinpur	28·0	1,400	1,050	55
14.	Bazpur	27·0	1,350	1,012	21
15.	Meerut	39·0	1,950	1,462	96
16.	Sarsawa	9·0	450	338	..
17.	Amroha	58·0	2,900	2,175	142
18.	Baheri	49·0	2,450	1,838	109
19.	Saharanpur	46·0	2,300	1,725	123
20.	Rohanakalan	34·0	1,700	1,275	77
21.	Daurala	34·0	1,700	1,275	77
22.	Kashipur	46·0	2,300	1,725	93
23.	Lhaksar	45·0	2,250	1,688	119
24.	Maholi	49·0	2,450	1,838	134
25.	Raja-ka-Sahaspur . . .	54·0	2,700	2,025	128
26.	Deoband	42·0	2,100	1,575	107
27.	Pilibhit	78·0	3,900	2,925	233
28.	Hardoi	51·0	2,550	1,912	141
29.	Iqbalpur	58·0	2,900	2,175	167
30.	Mansurpur	54·0	2,700	2,025	153
31.	Dhampur	39·0	1,950	1,462	76

सत्यमेव जयते

TABLE II-B—*contd.*

1	2	3	4	5	6
32.	Khatauli	50·0	2,500	1,875	137
33.	Simbhaoli	52·0	2,600	1,950	145
34.	Hargaon	94·0	4,700	3,525	303
35.	Mawana	39·0	1,950	1,462	96
36.	Shamli	73·0	3,650	2,738	224
37.	Seohara	81·0	4,050	3,038	234
38.	Gola	128·0	6,400	4,800	380
	TOTAL . .	1846·0	92,300	69,227	4,841

SOURCE:—Office of the Cane Commissioner, U.P., Lucknow.

TABLE II-C

Cane Seed Requirement

Sl. No.	Name of Factory	Approximate area under cane (000 acres)	Amount of seed requirement yearly (tonnes)	Amount of seed proposed to be distributed by C.D.C. yearly (tonnes)	Balance requirement to be met by growers
1	2	3	4	5	6
1.	Doiwala	13·0	18,200	3,640	14,560
2.	Aira	35·0	49,000	9,800	39,200
3.	Rosa	38·0	53,200	10,640	42,560
4.	Neoli	36·0	50,400	10,080	40,320
5.	Bagpat	61·0	85,400	17,080	68,320
6.	Bareilly	45·0	63.000	12,600	50,400
7.	Buland }	87·0	121,800	24,360	97,440
8.	Raza				
9.	Panninagar	56·0	78,400	15,680	62,720
10	Bijnor	45·0	63,000	12,600	50,400
11.	Modinagar	49·0	68,600	13,720	54,880
12.	Sakhotitanda	24·0	33,600	6,720	26,880
13.	Mohiuddinpur	28·0	39,200	7,840	31,360
14.	Bazpur	27·0	37,800	7,560	30,240
15.	Meerut	39·0	54,600	10,920	43,680
16.	Sarsawa	9·0	12,600	2,520	10,080
17.	Amroha	58·0	81,200	16,240	64,960
18.	Baheri	49·0	68,600	13,720	54,880
19.	Saharanpur	46·0	64,400	12,880	51,520
20.	Rohanakalan . . .	34·0	47,600	9,520	38,080
21.	Daurala	34·0	47,600	9,520	38,080
22.	Kashipur	46·0	64,400	12,880	51,520
23.	Lhaksar	45·0	63,000	12,600	50,400
24.	Maholi	49·0	68,600	13,720	54,880
25.	Raja-ka-Sahaspur . . .	54·0	75,600	15,120	60,480
26.	Deoband	42·0	58,800	11,760	47,040

TABLE II-C—*contd.*

1	2	3	4	5	6
27.	Pilibhit	78·0	109,200	21,840	87,360
28.	Hardoi	51·0	71,400	14,280	57,120
29.	Iqbalpur	58·0	81,200	16,240	64,960
30.	Mansurpur	54·0	75,600	15,120	60,480
31.	Dhampur	39·0	54,600	10,920	43,680
32.	Khatauli	50·0	70,000	14,000	56,000
33.	Simbhaoli	52·0	72,800	14,560	58,240
34.	Hargaon	94·0	131,600	26,320	105,280
35.	Mawana	39·0	54,600	10,920	43,680
36.	Shamli	73·0	102,200	20,440	81,760
37.	Seohara	81·0	113,400	22,680	90,720
38.	Gola	128·0	179,200	35,840	143,360
	TOTAL	1846·0	2,584,400	516,880	2,067,520

SOURCE:—Office of the Cane Commissioner, U.P., Lucknow.

TABLE II-D

Means of Communications

SL No.	Name of Factory	Existing *pucca* roads in factory zone (Km.)	Requirements		
			pucca roads in Km.	No. of bridges	No. of culverts
1	2	3	4	5	6
1.	Doiwala	100	25	4	50
2.	Aira	10	97	15	300
3.	Rosa	129	64	5	150
4.	Neoli	129	64	4	200
5.	Bagpat	64	64	3	100
6.	Bareilly	200	60	5	200
7. 8.	Buland Raza	161	97	5	150
9.	Panninagar	187	97	3	100
10.	Bijnor	129	81	5	150
11.	Modinagar	97	48	2	100
12.	Sakhotitanda	40	48	3	100
13.	Mohiuddinpur	64	64	2	100
14.	Bazpur	68	81	4	150
15.	Meerut	97	64	4	150
16.	Sarsawa	26	64	3	180
17.	Amroha	182	24	5	200
18.	Baheri	15	24	10	300
19.	Saharanpur	174	97	4	100
20.	Rohanakalan	55	48	4	100

TABLE II-D—*contd.*

1	2	3	4	5	6
21.	**Daurala**	64	64	3	150
22.	**Kashipur**	140	64	3	100
23.	**Lhaksar**	56	81	4	150
24.	**Maholi**	97	81	10	110
25.	**Raja-ka-Sahaspur**	34	12	5	150
26.	**Deoband**	93	64	2	100
27.	**Pilibhit**	121	81	5	200
28.	**Hardoi**	153	64	5	200
29.	**Iqbalpur**	97	97	5	150
30.	**Mansurpur**	116	48	3	100
31.	**Dhampur**	87	81	5	150
32.	**Khatauli**	55	48	4	100
33.	**Simbhaoli**	97	64	3	150
34.	**Hargaon**	174	97	5	250
35.	**Mawana**	87	81	4	200
36.	**Shamli**	121	81	4	200
37.	**Seohara**	132	97	10	250
38.	**Gola**	87	97	15	400
	TOTAL	3,725	2,513	184	5,890

NOTE—Figures are approximate and are only indicative.
SOURCE:—Office of the Cane Commissioner, U.P., Lucknow.

TABLE III-A

Milling Plant

Sl. No.	Name of factory	Capacity (tonnes/ day)	Cane knives Total HP & number of sets	Milling tandem No. of rollers & size	Mill drive	
					Type	Total HP
1	2	3	4	5	6	7
1.	Doiwala	528	175(2)	18/22½″×42″	E	510
2.	Aira	660	280(2)	9/24″×48″ 3/30″×60″	E	700
3.	Rosa	737	100(1)	12/30″×60″	E	400
4.	Neoli	1,270	250(2)	17/27″×56″	E	640
5.	Bagpat	1,016	300(2)	15/28″×56″	E	1,160
6.	Bareilly	1,016	N.A.(2)	15/27″×54″	E	460
7.	Buland	1,016	100(1)	15/30″×60″	E	750
8.	Panninagar	1,016	300(2)	15/30″×60″	E	860
9.	Bijnor	1,067	243(2)	18/24″×48″	E	684
10.	Modinagar	1,067	300(2)	14/24″×48″ 6/26″×48″	E	700
11.	Sakhotitanda	1,118	200(2) I 175(2) II	18/23″×42″ 12/23″×36″	E E	370 185

TABLE III-A—*contd.*

1	2	3	4	5	6	7
12.	Mohiuddinpur	1,158	200(2)	14/24″×48″ 3/30″×60″	E	500
13.	Raza	1,168	100(1)	14/30″×60″	E	650
14.	Bazpur	1,219	300(2)	15/28″×56″	E	1,000
15.	Meerut	1,219	370(3)	18/27″×54″	E	700
16.	Sarsawa	1,219	80(1)	11/24″×48″ 3/29″×57″	E	500
17.	Amroha	1,255	N.A.(2)I	17/20″×36″	E	300
			N.A.(2)II	15/24″×48″	E	420
18.	Baheri	1,300	305(2)	17/30″×60″	E	650
19.	Saharanpur	1,321	100(1)	15/28″×56″	E	750
20.	Rohanakalan	1,372	210(2)	18/32″×60″	E	870
21.	Daurala	1,422	580(2)	17/30″×60″	E	1,050
22.	Kashipur	1,524	240(2)	17/28″×56″	E	900
23.	Lhaksar	1,524	325(2)	14/28″×56″ 3/30″×60″	E	755
24.	Maholi	1,524	280(2)	17/28″×56″	E	1,060
25.	Raja-ka-Sahaspur	1,524	400(2)	15/30″×60″	E	950
26.	Deoband	1,626	400(2)	18/32″×60″	T	2,100
27.	Pilibhit	1,778	200(2) I	17/24″×48″	E	760
			182(2) II	17/24″×48″	E	760
28.	Hardoi	1,829	335(2)	6/33″×72″ 9/31″×60″	E	850
29.	Iqbalpur	1,829	297(2)	17/33″×69″	E	900
30.	Mansurpur	1,829	240(2) I	17/25″×48″	E	500
			220(2) II	18/25″×48″	E	950
31.	Dhampur	2,032	235(2) I	17/28″×56″	E	400
			165(2) II	18/24″×48″	E	400
32.	Khatauli	2,032	350(2)	9/34″×60″ 9/31″×60″	E	1,500
33.	Simbhaoli	2,032	120(1) I	17/24″×48″	E	450
			150(1) II	15/25″×48″	E	860
34.	Hargaon	2,642	350(2) I	15/26″×54″	E	1,100
			220(2) II	18/24″×48″	E	600
35.	Mawana	3,048	369(2) I	15/28″×56″	E	450
			N.A. II	N.A.	N.A.	N.A.
36.	Shamli	3,048	360(1)	18/36″×78″	E	2,180
37.	Seohara	3,251	400(2) I	18/30″×60″	E	1,300
			400(2) II	11/28″×56″ 6/32″×60″	E	1,050
38.	Gola	3,658	280(2) I	15/26″×54″	E	900
			560(2) II	15/36″×70″	E	1,800

E = Steam Engine
T = Turbine
N.A. = Not Available

SOURCE:— Factory Returns.

TABLE III-B

Power and Steam Generating Plants

Sl. No.	Name of Factory	Capacity (tonnes/day)	Power generating units Total K.W.	Boilers No./ H.S. Pressure (sq.ft.)/(p.s.i.)	H.S. per cent boiler H.S.	
					Economizer	Superheater
1	2	3	4	5	6	7
1.	Doiwala	528	85	4/12490/150	Nil	18
2.	Aira	660	926	4/10400/160 5/17830/200	10	N.A.
3.	Rosa	737	Nil	3/10482/120 1/5000 /170	Nil	Nil
4.	Neoli	1,270	445	6/25000/160	Nil	5
5.	Bagpat	1,016	1,250	3/18312/280	Nil	25
6.	Bareilly	1,016	1,200	5/23528/175	Nil	N.A.
7.	Buland	1,016	900	6/18832/160	Nil	Nil
8.	Panninagar	1,016	1,300	5/24812/150	Nil	Nil
9.	Bijnor	1,067	250	6/18850/160	25	Nil
10.	Modinagar	1,067	71	6/22330/160	38	13
11.	Sakhotitanda	1,118	630	6/24000/150	Nil	Nil
12.	Mohiuddinpur	1,158	250	2/8168/160 3/7992 /142	15	5
13.	Raza	1,168	650	6/18840/160	Nil	7
14.	Bazpur	1,219	1,200	3/21957/240	32	12
15.	Meerut	1,219	1,557	6/26025/160	N.A.	N.A.
16.	Sarsawa	1,219	725	4/10672/142 1/4020/N.A.	25	Nil
17.	Amroha	1,255	1,150	5/26564/N.A.	Nil	Nil
18.	Baheri	1,300	1,000	6/17508/160	Nil	6
19.	Saharanpur	1,321	945	6/27972/165	Nil	4
20.	Rohanakalan	1,372	705	6/21240/160 1/6375/225	29	14
21.	Daurala	1,422	1,700	7/20925/160 3/12739/200	N.A.	N.A.
22.	Kashipur	1,524	1,350	2/5983/120 4/17936/160	Nil	5
23.	Lhaksar	1,524	1,027	6/27271/160	20	N.A.
24.	Maholi	1,524	850	8/27957/160	Nil	Nil
25.	Raja-ka-Sahaspur	1,524	1,436	6/30808/170	15	5
26.	Deoband	1,626	3,000	6/23859/160 1/7497/N.A.	9	15
27.	Pilibhit	1,778	760	10/39550/160	Nil	10
28.	Hardoi	1,829	1,770	8/29923/200	15	N.A.
29.	Iqbalpur	1,829	2,400	5/24791/160	13	N.A.
30.	Mansurpur	1,829	3,388	3/7992/142 6/21660/160 1/7500/200	21	N.A.
31.	Dhampur	2,032	1,500	8/36928/160	Nil	N.A.
32.	Khatauli	2,032	3,000	7/24721/165 1/7500/N.A.	N.A.	N.A.
33.	Simbhaoli	2,032	1,630	5/15229/140 3/19320/160	14	10

TABLE III-B—*contd.*

1	2	3	4	5	6	7
34.	Hargaon	2,642	3,200	11/49735/N.A.	N.A.	N.A.
35.	Mawana	3,048	1,200	1/4500/250 1/7600/280 4/16000/160	9	Nil
36.	Shamli	3,048	3,000	7/30350/160 3/25500/200	5	N.A.
37.	Seohara	3,251	2,400	7/46500/160	N.A.	Nil
38.	Gola	3,658	3,650	12/59825/160	5	Nil

N.A. = Not Available.
SOURCE:= Factory Returns.

TABLE III-Ci

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Juice-weighing manual or automatic	Juice Heater: Total H.S. (sq. ft.)	Juice Heater: Vertical or horizontal	Juice Heater: Vapour line juice heater H.S. (sq. ft.)
1	2	3	4	5	6	7
1.	Doiwala	528	M	2,397	V	Nil
2.	Aira	660	A	3,850	V	1,050
3.	Rosa	737	A	4,258	V	Nil
4.	Neoli	1,270	M	4,000	V	Nil
5.	Bagpat	1,016	A	5,450	V	Nil
6.	Bareilly	1,016	A	2,250	H	Nil
7.	Buland	1,016	A	1,200 2,000 1,000	V H V	 Nil Nil
8.	Panninagar	1,016	A	8,147	V	Nil
9.	Bijnor	1,067	A	3,082	V	Nil
10.	Modinagar	1,067	A	4,200	V	1,792
11.	Sakhotitanda	1,118	A	6,500	V	1,500
12.	Mohiuddinpur	1,158	A	2,676	V	Nil
13.	Raza	1,168	A	2,500	V	1,600
14.	Bazpur	1,219	A	4,800	V	Nil
15.	Meerut	1,219	A	4,959	N.A.	Nil
16.	Sarsawa	1,219	A	2,400	V	Nil
17.	Amroha	1,255	A	6,206	N.A.	Nil
18.	Baheri	1,300	M	3,500	V	Nil
19.	Saharanpur	1,321	A	4,200	V	Nil
20.	Rohanakalan	1,372	A	3,800	V	1,480
21.	Daurala	1,422	A	7,100	N.A.	2,180
22.	Kashipur	1,524	A	4,270	V	Nil

TABLE III-Ci—*contd.*

1	2	3	4	5	6	7
23.	Lhaksar	1,524	M	5,700	N.A.	1,570
24.	Maholi	1,524	A	3,300	H	Nil
25.	Raia-ka-Sahaspur . .	1,524	M	5,418	V	1,400
26.	Deoband . . .	1,626	A	4,000	V	1,800
27.	Pilibhit	1,778	A	5,600	V	1,500
28.	Hardoi	1,829	M	6,682	V	1,630
29.	Iqbalpur	1,829	M	4,000	V	2,324
30.	Mansurpur . . .	1,829	A	5,800	N.A.	Nil
31.	Dhampur . . .	2,032	A	8,000	V	Nil
32.	Khatauli	2,032	A	6,230	N.A.	1,800
33.	Simbhaoli . . .	2,032	M	5,750	N.A.	Nil
34.	Hargaon	2,642	M	9,000	V	Nil
35.	Mawana	3,048	A	4,500	H	1,600
36.	Shamli	3,048	A	6,160	V	N.A.
37.	Seohara	3,251	A	12,500	V	Nil
38.	Gola	3,658	A	9,850	H	Nil

A = Automatic
M = Manual
V = Vertical
H = Horizontal
N.A. = Not Available.
SOURCE:— Factory Returns.

सत्यमेव जयते

TABLE III-C ii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Sulphitation or carbonation tanks	Settling	Filtration	Pre-heater H.S. sq. ft.	Vapour cell H. S. sq. ft.	Evaporators Type	Evaporators Vapour bleeding
1	2	3	4	5	6	7	8	9	10
1.	Doiwala* .	528	B	—	B	550	Nil	Q	Yes
2.	Aira .	660	B	C	B	Nil	2,250	Q	Yes
3.	Rosa . .	737	B	C	B	Nil	Nil	Q	Yes
4.	Neoli .	1,270	B	C	B	Nil	Nil	Q	N.A.
5.	Bagpat* .	1,016	B	—	B	Nil	Nil	Q	Yes
6.	Bareilly .	1,016	B	C	B	Nil	Nil	T&Q	No
7.	Buland* .	1,016	B	—	B	Nil	3,000	Q	No
8.	Panninagar.	1,016	B	C	B	Nil	8,000	Q	No

TABLE III-Cii—*contd.*

1	2	3	4	5	6	7	8	9	10
9.	Bijnor	1,067	B	C	C	Nil	Nil	Q	N.A.
10.	Modinagar*	1,067	B	—	B	1,200	Nil	Q	Yes
11.	Sakhoti-tanda	1,118	B	B	B	Nil	5,000	T	N.A.
12.	Mohiuddin-pur	1,158	B	B	B	590	Nil	Q	Yes
13.	Raza*	1,168	B	—	B	Nil	Nil	Q	N.A.
14.	Bazpur*	1,219	B	—	B	Nil	Nil	Q	Yes
15.	Meerut	1,219	C	C	C	Nil	4,000	Q	No
16.	Sarsawa	1,219	B	C	B	Nil	Nil	Q	No
17.	Amroha	1,255	B	C	B	Nil	Nil	Q	N.A.
18.	Baheri	1,300	B	C	C	Nil	Nil	Q	No
19.	Saharanpur	1,321	B	C	B	Nil	Nil	T	No
20.	Rohana-kalan*	1,372	B	—	B	1,400	Nil	Q	Yes
21.	Daurala*	1,422	B	—	B	Nil	Nil	Quin	Yes
22.	Kashipur	1,524	B	C	B	Nil	Nil	T&Q	No
23.	Lhaksar*	1,524	B	—	B	Nil	8,000	Q	No
24.	Maholi*	1,524	B	—	B	1,250	Nil	Q	Yes
25.	Raja-ka-Sahaspur	1,524	B	C	B	Nil	Nil	Q	No
26.	Deoband*	1,626	B	—	B	Nil	Nil	Q	N.A.
27.	Pilibhit	1,778	B	C	B	Nil	Nil	Q	No
28.	Hardoi*	1,829	B	—	B	Nil	Nil	Q	Yes
29.	Iqbalpur*	1,829	B	—	B	1,000	Nil	Q	Yes
30.	Mansurpur*	1,829	B	—	B	1,500	Nil	Q	N.A.
31.	Dhampur	2,032	B	C	B	Nil	Nil	Q & Quin	N.A.
32.	Khatauli*	2,032	B	—	B	Nil	Nil	Q	Yes
33.	Simbhaoli	2,032	B	B	B	Nil	Nil	Q	N.A.
34.	Hargaon	2,642	B	C	B	Nil	5,000	Q	N.A.
35.	Mawana*	3,048	B	—	B	1,940	Nil	Q	Yes
36.	Shamli*	3,048	B	—	B	2,100	Nil	Quin	Yes
37.	Seohara	3,251	B	C	C	Nil	Nil	Q	N.A.
38.	Gola	3,658	B	C	C	Nil	Nil	Q & Quin	No

B = Batch
C = Continuous
T = Triple
Q = Quadruple
Quin = Quintuple
N.A. = Not Available

NOTE.—Factories marked (*) are carbonation and rest are sulphitation.

SOURCE.—Factory Returns.

TABLE III-C-iii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Pans		Low grade crystalliser	
			Total capacity (tonnes)	% coil capacity	No.	% water cooled capacity
1	2	3	4	5	6	7
1.	Doiwala	528	121	15	7	18
2.	Aira	660	136	10	7	90
3.	Rosa	737	101	41	5	N.A.
4.	Neoli	1,270	N.A.	N.A.	5	100
5.	Bagpat	1,016	155	Nil	5	100
6.	Bareilly	1,016	123	Nil	6	N.A.
7.	Buland	1,016	115	Nil	7	N.A.
8.	Panninagar	1,016	146	19	6	N.A.
9.	Bijnor	1,067	92	Nil	6	100
10.	Modinagar	1,067	132	Nil	7	72
11.	Sakhotitanda	1,118	159	28	8	100
12.	Mohiuddinpur	1,158	95	32	6	100
13.	Raza	1,168	140	15	6	100
14.	Bazpur	1,219	156	Nil	4	100
15.	Meerut	1,219	222	13	6	33
16.	Sarsawa	1,219	112	35	6	100
17.	Amroha	1,255	173	Nil	9	N.A.
18.	Baheri	1,300	130	31	8	100
19.	Saharanpur	1,321	160	16	6	100
20.	Rohanakalan	1,372	164	13	6	100
21.	Daurala	1,422	256	16	8	100
22.	Kashipur	1,524	161	Nil	6	100
23.	Lhaksar	1,524	209	Nil	9	74
24.	Maholi	1,524	182	19	7	100
25.	Raja-ka-Sahaspur . .	1,524	171	30	6	33
26.	Deoband	1,626	254	6	7	100
27.	Pilibhit	1,778	235	9	10	100
28.	Hardoi	1,829	181	41	6	72
29.	Iqbalpur	1,829	277	Nil	8	100
30.	Mansurpur	1,829	275	Nil	8	100
31.	Dhampur	2,032	250	20	7	100
32.	Khatauli	2,032	219	Nil	10	70
33.	Simbhaoli	2,032	187	19	13	77
34.	Hargaon	2,642	321	Nil	11	100
35.	Mawana	3,048	265	N.A.	5	100
36.	Shamli	3,048	422	Nil	13	N.A.
37.	Seohara	3,251	353	Nil	14	100
38.	Gola	3,658	362	Nil	19	100

N.A. = Not Available.

Source.—Factory Returns.

TABLE III-Civ

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Centrifugals			
			Ordinary		High speed	
			No.	Size	No.	Size
1	2	3	4	5	6	7
1.	Doiwala	528	18 2	18"×36" 20"×42"	Nil	..
2.	Aira	660	12 7 12	20"×42" 18"×36" 18"×30"	Nil	..
3.	Rosa	737	6 22	20"×42" 18"×36"	Nil	—
4.	Neoli	1,270	39	18"×36"	Nil	—
5.	Bagpat	1,016	..	..	7	30"×40"
6.	Bareilly	1,016	33	18"×36"	Nil	—
7.	Buland	1,016	35	18"×36"	Nil	—
8.	Panninagar	1,016	28 6 6	18"×36" 18"×30" 20"×42"	Nil	..
9.	Bijnor	1,067	35	18"×36"	Nil	..
10.	Modinagar	1,067	24 6	18"×36" 20"×42"	Nil	..
11.	Sakhotitanda	1,118	31	18"×36"	Nil	..
12.	Mohiuddinpur	1,158	25	18"×36"	Nil	..
13.	Raza	1,168	30	18"×36"	Nil	..
14.	Bazpur	1,219	Nil	..	5 5	32"×49" 25"×45"
15.	Meerut	1,219	25 4 20	24"×42" 24"×40" 18"×36"	Nil	..
16.	Sarsawa	1,219	24	18"×36"	Nil	..
17.	Amroha	1,255	14 29 6	18"×30" 18"×36" 20"×42"	Nil	..
18.	Baheri	1,300	32	18"×36"	Nil	..
19.	Saharanpur	1,321	38	18"×36"	Nil	..
20.	Rohanakalan	1,372	25 3 7 2	18"×36" 20"×40" 20"×43" 24"×48"	Nil	..

TABLE III-Civ—*Contd.*

1	2	3	4	5	6	7
21.	Daurala . . .	1,422	7	18"×36"	1 6 4	32"×49" 26"×49" 24"×45"
22.	Kashipur . . .	1,524	11 21 12	18"×30" 18"×36" 20"×42"	Nil	—
23.	Lhaksar . . .	1,524	38	18"×36"	1	32"×49"
24.	Maholi . . .	1,524	30 13	18"×36" 18"×30"	Nil	—
25.	Raja-ka-Sahaspur .	1,524	32 12 2	18"×36" 18"×30" 24"×42"	2	24"×49"
26.	Deoband . . .	1,626	13	18"×30"	8 6	24"×48" 32"×49"
27.	Pilibhit . . .	1,778	15 30 6	20"×42" 18"×36" 24"×40"	Nil	..
28.	Hardoi . . .	1,829	20 20	18"×30" 20"×42"	Nil	—
29.	Iqbalpur . . .	1,829	4 8	23"×40" 18"×36"	6 5	32"×49" 24"×45"
30.	Mansurpur . .	1,829	Nil	—	8 6	32"×49" 24"×48"
31.	Dhampur . .	2,032	25 19	20"×42" 18"×36"	3	24"×48"
32.	Khatauli . . .	2,032	18	18"×36"	4 6	32"×49" 24"×48"
33.	Simbhaoli . . .	2,032	43	18"×36"	2	28"×48"
34.	Hargaon . . .	2,642	16 47	20"×42" 18"×36"	Nil	—
35.	Mawana . . .	3,048	2 28 10	20"×42" 18"×36" 18"×30"	Nil	—
36.	Shamli . . .	3,048	52	N.A.	4	30"×40"
37.	Seohara . . .	3,251	12 31 7 17	18"×30" 20"×42" 20"×42" 18"×36"	Nil	—
38.	Gola	3,658	22 5 14	20"×42" 20"×40" 18"×36"	6 3 4	24"×48" 25"×45" 32"×49"

N.A. = Not Available.

SOURCE.—Factory Returns.

सत्यमेव जयते

TABLE IV-Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	12·39	12·03	11·83	12·00
2.	Aira	12·64	12·51	12·25	12·92
3.	Rosa	12·20	12·22	11·96	12·21
4.	Neoli	11·95	11·93	12·02	11·77
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	12·17	12·09	12·02	11·89
7.	Buland	11·90	11·95	11·77	12·33
8.	Panninagar	12·17	12·22	11·83	11·51
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	11·93	12·11	11·80	11·21
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	12·21	12·09	11·78	11·41
13.	Raza	12·08	11·52	11·60	12·09
14.	Bazpur	11·75	11·77	11·73	11·57
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	11·16
17.	Amroha	12·45	12·28	12·29	11·99
18.	Baheri	12·34	12·22	12·35	12·42
19.	Saharanpur	12·02	11·93	11·23	11·43
20.	Rohanakalan	12·08	11·74	11·39	11·24
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	12·05	11·99	11·93	12·41
23.	Lhaksar	12·32	11·97	11·67	12·13
24.	Maholi	12·61	11·80	11·64	12·15
25.	Raja-ka-Sahaspur	12·17	12·22	11·65	11·94
26.	Deoband	12·47	12·16	11·57	11·87
27.	Pilibhit	12·28	12·06	11·75	11·81
28.	Hardoi	12·29	11·83	12·31	12·53
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	11·73	11·63	11·33	11·01
31.	Dhampur	12·05	12·21	12·33	12·37
32.	Khatauli	12·30	11·91	11·72	11·55
33.	Simbhaoli	12·10	11·84	11·49	11·25
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	11·91	11·56	11·34	11·15
36.	Shamli	11·90	11·48	11·01	11·53
37.	Seohara	12·39	12·61	12·36	12·38
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A. = Not Available.

SOURCE.—Factory Returns.

TABLE IV-Aii

Cane Quality (Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	**Doiwala**	14·84	15·36	15·46	16·80
2.	**Aira**	15·94	15·84	15·04	14·39
3.	**Rosa**	15·47	17·26	17·63	16·84
4.	**Neoli**	16·26	16·53	16·04	15·66
5.	**Bagpat**	N.A.	N.A.	N.A.	N.A.
6.	**Bareilly**	16·24	15·28	15·19	16·25
7.	**Buland**	17·77	17·18	16·69	16·10
8.	**Panninagar**	14·24	15·15	14·02	14·79
9.	**Bijnor**	N.A.	N.A.	N.A.	N.A.
10.	**Modinagar**	14·11	13·98	14·36	14·27
11.	**Sakhotitanda**	N.A.	N.A.	N.A.	N.A.
12.	**Mohiuddinpur**	13·75	13·04	13·50	13·33
13.	**Raza**	17·45	15·99	16·41	16·46
14.	**Bazpur**	15·90	15·35	15·99	15·97
15.	**Meerut**	N.A.	N.A.	N.A.	N.A.
16.	**Sarsawa**	..	..	..	14·32
17.	**Amroha**	15·56	16·68	15·42	16·02
18.	**Baheri**	16·19	16·60	17·52	16·63
19.	**Saharanpur**	15·42	15·92	15·72	15·37
20.	**Rohanakalan**	14·49	14·24	13·20	14·58
21.	**Daurala**	N.A.	N.A.	N.A.	N.A.
22.	**Kashipur**	15·72	16·14	15·65	16·41
23.	**Lhaksar**	14·32	14·97	15·22	16·03
24.	**Maholi**	16·97	16·47	16·51	15·82
25.	Raja-ka-Sahaspur	16·31	15·61	16·47	16·40
26.	Deoband	15·64	15·34	14·97	15·00
27.	Pilibhit	16·77	16·27	16·80	16·26
28.	Hardoi	16·77	17·27	17·73	16·38
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	15·24	15·61	15·89	15·44
31.	Dhampur	15·80	16·18	16·05	16·14
32.	Khatauli	15·37	15·89	15·95	14·84
33.	Simbhaoli	15·43	15·11	15·41	15·27
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	14·94	15·70	15·91	15·06
36.	Shamli	14·52	15·35	14·96	14·03
37.	Seohara	15·24	16·06	15·85	15·38
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A. = Not Available

SOURCE.—Factory Returns.

TABLE IV—Aiii

Cane Quality (Primary juice purity)

Sl. No.	Name of Factory	Primary juice purity			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	82·24	79·53	79·69	80·80
2.	Aira	83·10	83·02	84·24	86·49
3.	Rosa	83·06	83·92	83·99	86·05
4.	Neoli	82·38	81·80	82·72	82·35
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	81·65	82·31	82·58	82·86
7.	Buland	81·59	82·33	81·55	83·20
8.	Panninagar	84·16	83·68	84·17	81·93
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	83·57	82·68	83·29	82.13
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	84·27	83·95	83·30	82·48
13.	Raza	80·85	79·84	79·38	82·17
14.	Bazpur	80·40	80·94	79·22	78·68
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	81·46
17.	Amroha	82·36	82·75	82·15	83·38
18.	Baheri	81·70	82·21	82·08	82·95
19.	Saharanpur	82·74	81·79	79·52	81·97
20.	Rohanakalan	81·95	80·11	81·01	80·52
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	81·50	81·40	82·03	83·45
23.	Lhaksar	82·97	80·74	80·79	81·95
24.	Maholi	84·90	84·41	83·98	85·68
25.	Raja-ka-Sahaspur	81·52	82·26	82·75	83·32
26.	Deoband	84·21	82·99	82·61	84·12
27.	Pilibhit	83·19	82·24	81·10	83·73
28.	Hardoi	84·21	84·18	84·11	85·76
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	82·41	81·36	81·67	81·23
31.	Dhampur	80·82	82·14	82·17	83·27
32.	Khatauli	83·72	82·76	83·08	83·10
33.	Simbhaoli	83·39	83·37	82·50	82·56
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	86·08	83·42	84·02	82·79
36.	Shamli	82·50	80·66	80·79	82·63
37.	Seohara	81·58	82·34	82·11	82·80
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A. = Not Available.

Source .—Factory Returns.

TABLE IV-Bi

Time Account (Duration of season)

Sl. No.	Name of Factory	Duration of season (days)			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	180	223	207	138
2.	Aira	214	203	181	162
3.	Rosa	141	156	163	88
4.	Neoli	154	161	127	127
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	184	195	188	134
7.	Buland	131	188	181	191
8.	Panninagar	157	199	122	101
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	165	179	137	103
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	162	185	146	106
13.	Raza	135	201	206	182
14.	Bazpur	183	200	201	141
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	--	--	92
17.	Amroha	187	214	169	120
18.	Baheri	201	207	206	161
19.	Saharanpur	180	220	178	115
20.	Rohanakalan	155	199	143	101
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	211	222	216	155
23.	Lhaksar	134	177	159	118
24.	Maholi	171	206	196	134
25.	Raja-ka-Sahaspur	194	214	182	120
26.	Deoband	162	202	179	123
27.	Pilibhit	166	197	218	125
28.	Hardoi	120	139	153	94
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	176	194	148	110
31.	Dhampur	209	224	181	105
32.	Khatauli	163	189	144	110
33.	Simbhaoli	163	182	143	106
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	170	186	155	107
36.	Shamli	193	222	167	142
37.	Seohara	197	218	186	116
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A.=Not Available.

Source—Factory Returns.

TABLE IV-Bii

Time Account (Time loss)

Sl. No.	Name of Factory	Time loss per cent available			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	9·63	9·14	8·57	8·14
2.	Aira	11·76	13·97	8·52	6·78
3.	Rosa	19·30	20·40	19·10	19·60
4.	Neoli	14·04	11·74	16·72	13·66
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	17·09	14·46	15·84	15·72
7.	Buland	9·60	9·00	10·50	13·50
8.	Panninagar	15·95	17·43	17·28	14·58
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	16·18	14·86	16·21	14·05
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	14·63	13·03	14·69	21·00
13.	Raza	9·30	10·10	11·40	10·90
14.	Bazpur	12·89	14·96	16·23	24·15
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	—	—	—	29·26
17.	Amroha	16·33	12·38	17·72	20·48
18.	Baheri	12·90	16·67	12·91	16·00
19.	Saharanpur	9·05	7·77	10·65	11·43
20.	Rohanakalan	16·63	16·20	16·49	24·62
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	10·49	9·47	10·20	10·70
23.	Lhaksar	12·75	15·66	16·32	18·52
24.	Maholi	9·60	11·58	11·02	12·02
25.	Raja-ka-Sahaspur	10·33	8·02	11·00	11·80
26.	Deoband	14·31	11·40	13·16	10·83
27.	Pilibhit	18·73	20·02	21·90	22·03
28.	Hardoi	11·48	13·42	18·70	13·50
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	N.A.	N.A.	N.A.	N.A.
31.	Dhampur	12·27	12·78	27·13	19·57
32.	Khatauli	10·16	5·79	7·30	8·52
33.	Simbhaoli	23·20	13·30	14·70	16·20
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	17·38	12·26	10·48	13·14
36.	Shamli	8·64	8·24	8·66	9·16
37.	Seohara	17·34	22·18	17·66	19·12
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A.=Not Available.

Source—Factory Returns.

TABLE IV-Ci

Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	9·82	9·36	9·13	9·36
2.	Aira	9·87	9·64	9·62	10·36
3.	Rosa	9·62	9·63	9·36	9·75
4.	Neoli	9·44	9·37	9·50	9·35
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	9·51	9·58	9·32	9·61
7.	Buland	9·63	9·71	9·21	9·77
8.	Panninagar	9·62	9·57	9·47	9·00
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	9·75	9·82	9·48	9·00
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	9·64	9·66	9·34	8·99
13.	Raza	9·69	9·28	8·98	9·70
14.	Bazpur	8·86	9·12	9·08	9·40
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	7·96
17.	Amroha	9·48	9·35	9·50	9·28
18.	Baheri	9·59	9·58	9·68	9·85
19.	Saharanpur	9·49	9·24	8·44	9·00
20.	Rohanakalan	9·47	8·90	8·79	8·72
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	9·33	9·29	9·27	9·76
23.	Lhaksar	9·97	9·43	9·22	9·61
24.	Maholi	10·44	9·78	9·62	10·08
25.	Raja-ka-Sahaspur	9·54	9·72	9·18	9·50
26.	Deoband	9·95	9·80	9·17	9·75
27.	Pilibhit	9·58	9·35	8·82	9·33
28.	Hardoi	10·06	9·62	9·81	10·39
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	9·48	9·29	9·24	9·02
31.	Dhampur	9·38	9·53	9·49	9·82
32.	Khatauli	9·82	9·47	9·19	9·26
33.	Simbhaoli	9·69	9·46	9·14	8·97
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	9·88	9·38	9·14	8·95
36.	Shamli	9·51	9·08	8·61	9·33
37.	Seohara	9·60	9·63	9·62	9·74
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A.=Not Available.

Source—**Factory Returns.**

TABLE IV-Cii

Technical Efficiency (Total losses)

Sl. No.	Name of Factory	Total losses per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	2·57	2·67	2·70	2·64
2.	Aira	2·77	2·80	2·63	2·56
3.	Rosa	2·58	2·59	2·60	2·46
4.	Neoli	2·51	2·56	2·52	2·42
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	2·66	2·51	2·65	2·28
7.	Buland	2·27	2·24	2·56	2·56
8.	Panninagar	2·55	2·65	2·36	2·51
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	2·18	2·29	2·32	2·21
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	2·57	2·43	2·44	2·42
13.	Raza	2·39	2·21	2·62	2·39
14.	Bazpur	2·71	2·61	2·69	2·36
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	3·20
17.	Amroha	2·97	2·93	2·79	2·71
18.	Baheri	2·75	2·64	2·67	2·57
19.	Saharanpur	2·53	2·69	2·79	2·43
20.	Rohanakalan	2·61	2·84	2·60	2·52
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	2·72	2·70	2·66	2·65
23.	Lhaksar	2·35	2·54	2·45	2·52
24.	Maholi	2·17	2·02	2·02	2·07
25.	Raja-ka-Sahaspur	2·63	2·50	2·47	2·44
26.	Deoband	2·52	2·36	2·40	2·12
27.	Pilibhit	2·70	2·71	2·93	2·48
28.	Hardoi	2·23	2.21	2·50	2·14
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	2·25	2·34	2·09	1·99
31.	Dhampur	2·67	2·68	2·84	2·55
32.	Khatauli	2·48	2·44	2·53	2·29
33.	Simbhaoli	2·41	2·38	2·35	2·28
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	2·03	2·18	2·20	2·20
36.	Shamli	2·39	2·40	2·40	2·20
37.	Seohara	2·79	2·98	2·74	2·64
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A.—Not Available.

Source—Factory Returns.

TABLE IV-C iii

Technical Efficiency (Reduced overall extraction)

Sl. No.	Name of Factory	Reduced overall extraction			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	84·94	84·48	84·06	84·51
2.	Aira	83·13	82·13	82·13	81·79
3.	Rosa	83·36	83·80	83·42	82·99
4.	Neoli	84 .21	84·41	84·02	84·53
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	84·38	84·27	83·27	85·63
7.	Buland	86·90	86·60	84·60	84·10
8.	Panninagar	82·44	82·70	83·07	83·41
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	85·02	84·44	84·26	84·04
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	81·68	82·38	82·39	81·81
13.	Raza	85·90	86·50	84·80	85·50
14.	Bazpur	84·45	85·32	83·80	86·16
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	N.A.
17.	Amroha	82·04	82·35	83·07	82·64
18.	Baheri	84·28	84·36	84·71	84·51
19.	Saharanpur	84·08	83·90	83·11	84·20
20.	Rohanakalan	83·11	80·81	82·18	83·65
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	83·70	84·05	83·61	83·71
23.	Lhaksar	83·61	82·99	83·56	83·59
24.	Maholi	86·49	86·52	86·40	85·61
25.	Raja-ka-Sahaspur	84·71	85·01	84·46	84·60
26.	Deoband	84·01	85·17	84·20	85·65
27.	Pilibhit	83·81	84·01	83·06	83·99
28.	Hardoi	86·43	84·93	84·44	86·68
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	82·77	85·51	86·51	89·32
31.	Dhampur	84·13	83·74	82·90	84·13
32.	Khatauli	84·06	84·69	83·87	84·57
33.	Simbhaoli	84·04	84·73	84·65	84·58
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	85·64	85·48	84·74	84·63
36.	Shamli	84·46	85·02	84·25	84·88
37.	Seohara	83·53	82·38	83·33	83·46
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A.=Not **Available.**

Source—**Factory Returns.**

सत्यमेव जयते

TABLE IV-Di

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumption per cent cane in terms of bagasse			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	34·27	35·08	34·58	35·01
2.	Aira	33·36	33·99	32·05	30·70
3.	Rosa	33·31	37·27	38·01	37·21
4.	Neoli	34·67	35·53	34·77	33·87
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	36·07	33·35	33·16	35·24
7.	Buland	35·94	35·07	33·69	33·23
8.	Panninagar	31·94	35·83	32·71	33·52
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	33·26	32·68	33·18	32·89
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	30·65	28·72	30·26	31·54
13.	Raza	36·21	34·26	35·01	35·75
14.	Bazpur	34·17	33·78	32·45	33·72
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	39·45
17.	Amroha	36·52	35·10	34·34	35·94
18.	Baheri	29·66	31·60	32·86	33·81
19.	Saharanpur	33·82	34·43	34·70	34·14
20.	Rohanakalan	36·38	34·69	31·23	34·98
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	35·29	35·37	33·00	34·58
23.	Lhaksar	32·41	33·78	33·89	35·75
24.	Maholi	37·04	35·40	34·98	35·42
25.	Raja-ka-Sahaspur	35·86	32·59	34·91	33·81
26.	Deoband	32·75	29·46	27·83	29·60
27.	Pilibhit	36·14	34·83	36·09	34·58
28.	Hardoi	36·92	38·28	39·71	35·84
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	N.A.	N.A.	N.A.	N.A.
31.	Dhampur	35·40	36·10	36·92	36·05
32.	Khatauli	33·75	30·98	32·13	32·90
33.	Simbhaoli	31·70	30·60	32·80	33·60
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	32·57	34·37	31·57	30·43
36.	Shamli	32·65	33·30	33·84	33·7
37.	Seohara	31·13	32·65	33·07	33·57
38.	Gola	N.A.	N.A.	N.A.	N.A.

N.A.=Not Available.

Source—Factory Returns.

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed per cent cane in terms of bagasse			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Doiwala	2·17	2·05	2·15	2·52
2.	Aira	0·21	0·65	0·65	0·66
3.	Rosa	0·18	0·43	0·10	0·74
4.	Neoli	0·23	0·10	0·30	0·13
5.	Bagpat	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	0·63	0·18	0·22	0·01
7.	Buland	0·19	Nil	0·30	Nil
8.	Panninagar	0·87	2·51	2·33	0·21
9.	Bijnor	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	2·43	2·17	1·81	1·52
11.	Sakhotitanda	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	0·58	0·25	0·43	1·85
13.	Raza	0·13	Nil	0·03	0·01
14.	Bazpur	0·20	0·13	0·37	Nil
15.	Meerut	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	..	..	..	5·26
17.	Amroha	1·03	1·33	0·57	1·53
18.	Baheri	Nil	Nil	Nil	Nil
19.	Saharanpur	0·66	0·46	1·08	0·65
20.	Rohanakalan	3·51	2·87	2·28	3·53
21.	Daurala	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	0·82	0·86	0·59	0·43
23.	Lhaksar	0·97	0·84	0·57	0·57
24.	Maholi	0·28	0·28	0·20	0·36
25.	Raja-ka-Sahaspur	2·45	3·00	2·51	3·49
26.	Deoband	0·08	0·07	0·03	0·10
27.	Pilibhit	0·60	0·05	Nil	0·08
28.	Hardoi	Nil	Nil	Nil	Nil
29.	Iqbalpur	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	N.A.	N.A.	N.A.	N.A.
31.	Dhampur	0·95	0·91	2·08	0·52
32.	Khatauli	0·38	0·13	0·47	0·74
33.	Simbhaoli	Nil	Nil	Nil	Nil
34.	Hargaon	N.A.	N.A.	N.A.	N.A.
35.	Mawana	Nil	Nil	Nil	Nil
36.	Shamli	1·63	0·50	1·50	2·97
37.	Seohara	0·43	0·44	0·39	0·87
38.	Gola	N.A.	N.A.	N.A.	N.A.

सत्यमेव जयते

N.A.=Not Available.

Source—Factory Returns.

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Specifications of the existing milling tandem	Expansion as asked for by the factories (tonnes/ day)	Financial requirement as submitted by the factories (lac rupees)
1	2	3	4	5	6
1.	Doiwala	528	18/22½″×42″	1,500	93·68
2.	Aira	660	9/24″×48″ 3/30″×60″	N.A.	N.A.
3.	Rosa	737	12/30″×60″	1,200	45·00
4.	Neoli	1,270	17/27″×56″	2,250	86·38
5.	Bagpat	1,016	15/28″×56″	N.A.	N.A.
6.	Bareilly	1,016	15/27″×54″	N.A.	N.A.
7.	Buland	1,016	15/30″×60″	1,500	37·20
8.	Panninagar	1,016	15/30″×60″	3,600	160·12
9.	Bijnor	1,067	18/24″×48″	N.A.	N.A.
10.	Modinagar	1,067	14/24″×48″ 6/26″×48″	3,000	39·19
11.	Sakhotitanda	1,118	I 18/23″×42″ II 12/23″×36″	N.A.	N.A.
12.	Mohiuddinpur	1,158	14/24″×48″ 3/30″×60″	Nil	4·75
13.	Raza	1,168	14/30″×60″	1,500	40·91
14.	Bazpur	1,219	15/28″×56″	2,000	89·40
15.	Meerut	1,219	18/27″×54″	N.A.	N.A.
16.	Sarsawa	1,219	11/24″×48″ 3/29″×57″	Nil	31·00
17.	Amroha	1,255	I 17/20″×36″ II 15/24″×48″	2,500	75·00
18.	Baheri	1,300	17/30″×60″	1,700	34·25
19.	Saharanpur	1,321	15/28″×56″	3,000	96·50
20.	Rohanakalan	1,372	17/30″×60″	1,650	N.A.
21.	Daurala	1,422	17/30″×60″	N.A.	N.A.

सत्यमेव जयते

TABLE V—*contd.*

1	2	3	4	5	6
22.	Kashipur	1,524	17/28″×56″	2,250	45·11
23. 24.	Lhaksar	1,524	14/28″×56″ 3/30″×60″	2,000	30·00
	Maholi	1,524	17/28″×56″	N.A.	44·30
25.	Raja-ka-Sahaspur . . .	1,524	15/30″×60″	2,000	39·17
26.	Deoband	1,626	18/32″×60″	3,500	82·26
27.	Pilibhit	1,778 I II	17/24″×48″ 17/24″×48″	2,500	27·00
28.	Hardoi	1,829	6/33″×72″ 9/31″×60″	2,100	N.A.
29.	Iqbalpur	1,829	17/33″×69″	N.A.	N.A.
30.	Mansurpur	1,829 I II	17/25″×48″ 18/25″×48″	2,700	83·48
31.	Dhampur	2,032 I II	17/28″×56″ 18/24″×48″	2,500	12·73
32.	Khatauli	2,032	9/34″×60″ 9/31″×60″	N.A.	N.A.
33.	Simbhaoli	2,032 I II	17/24″×48″ 15/25″×48″	N.A.	N.A.
34.	Hargaon	2,642 I II	15/26″×54″ 18/24″×48″	N.A.	N.A.
35.	Mawana	3,048 I II	15/28″×56″ N.A.	Nil	—
36.	Shamli	3,048	18/36″×78″	N.A.	N.A.
37.	Seohara	3,251 I II	18/30″×60″ 11/28″×56″ 6/32″×60″	3,600	103·00
38.	Gola	3,658 I II	15/26″×54″ 15/36″×70″	N.A.	N.A.

N.A.=Not Available.

Source—Factory Returns.

TABLE VI—A

Existing Strength of Labour and Labour Considered Surplus at Present and After Modernisation

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Total labour employed	Labour surplus now		Labour surplus after modernisation	
				Skilled & semi-skilled	Un-skilled	Skilled & semi-skilled	Un-skilled
1	2	3	4	5	6	7	8
1.	Doiwala . .	528	700	Nil	Nil	..	..
2.	Aira . .	660	N.A.	N.A.	N.A.	N.A.	N.A.
3.	Rosa . .	737	1,169	16	26	41	18
4.	Neoli . .	1,270	879	Nil	Nil	Nil	115
5.	Bagpat . .	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
6.	Bareilly . .	1,016	1,135	Nil	Nil	N.A.	N.A.
7.	Buland . .	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
8.	Panninagar .	1,016	1,362	Nil	Nil	Nil	167
9.	Bijnor . .	1,067	N.A.	N.A.	N.A.	N.A.	N.A.
10.	Modinagar .	1,067	1,098	17	70	38	161
11.	Sakhotitanda .	1,118	N.A.	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur .	1,158	1,161	41	135	46	175
13.	Raza . .	1,168	N.A.	N.A.	N.A.	N.A.	N.A.
14.	Bazpur . .	1,219	670	N.A.	N.A.	N.A.	N.A.
15.	Meerut . .	1,219	N.A.	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa .	1,219	470	Nil	Nil	Nil	Nil
17.	Amroha . .	1,255	1,744	N.A.	N.A.	N.A.	N.A.
18.	Baheri . .	1,300	1,380	Nil	50	Nil	Nil
19.	Saharanpur .	1,321	1,292	Nil	Nil	Nil	Nil
20.	Rohanakalan .	1,372	1,573	N.A.	N.A.	N.A.	N.A.
21.	Daurala .	1,422	N.A.	N.A.	N.A.	N.A.	N.A.
22.	Kashipur .	1,524	1,229	8	Nil	31	75
23.	Lhaksar .	1,524	1,454	Nil	Nil	Nil	Nil
24.	Maholi . .	1,524	1,333	Nil	Nil	Nil	80
25.	Raja-ka-Sahaspur . .	1,524	1,538	80	120	Nil	Nil
26.	Deoband .	1,626	1,774	Nil	Nil	7	70
27.	Pilibhit . .	1,778	2,259	46	70	80	238
28.	Hardoi . .	1,829	1,455	40	50	30	100
29.	Iqbalpur .	1,829	N.A.	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur .	1,829	1,446	Nil	Nil	30	100
31.	Dhampur .	2,032	1,175	Nil	70	N.A.	N.A.
32.	Khatauli .	2,032	N.A.	N.A.	N.A.	N.A.	N.A.
33.	Simbhaoli .	2,032	1,731	10	50	16	200
34.	Hargaon .	2,642	N.A.	N.A.	N.A.	N.A.	N.A.
35.	Mawana .	3,048	1,112	Nil	Nil	Nil	Nil
36.	Shamli . .	3,048	1,997	N.A.	N.A.	N.A.	N.A.
37.	Seohara .	3,251	1,234	Nil	Nil	17	214
38.	Gola . .	3,658	N.A .	N.A.	N.A.	N.A.	N.A.
	TOTAL .		34,370 (26 fys.)	258	641	336	1,713

N.A.=Not Available.
Source—Factory Returns.

सत्यमेव जयते

TABLE VI—B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Man days/tonne of sugar			
			1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Doiwala	528	13·4	14·0	14·7	13·5
2.	Aira	660	N.A.	N.A.	N.A.	N.A.
3.	Rosa	737	16·2	16·5	17·5	17·2
4.	Neoli	1,270	9·4	9·4	10·3	10·5
5.	Bagpat	1,016	N.A.	N.A.	N.A.	N.A
6.	Bareilly	1,016	13·5	12.7	13·1	12·5
7.	Buland	1,016	N.A.	N.A.	N.A.	N.A.
8.	Panninagar	1,016	13·4	13·2	13·2	13·2
9.	Bijnor	1,067	N.A.	N.A.	N.A.	N.A.
10.	Modinagar	1,067	10·4	11·3	11·6	11·9
11.	Sakhotitanda	1,118	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	1,158	15·0	14·3	14·6	16·4
13.	Raza	1,168	N.A.	N.A.	N.A.	N.A.
14.	Bazpur	1,219	7·9	7·4	7·0	6·0
15.	Meerut	1,219	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	1,219	..	..	...	14·9
17.	Amroha	1,255	13·3	13·1	13·8	14·5
18.	Baheri	1,300	13·1	13·5	12·3	12·5
19.	Saharanpur	1,321	11·5	12·3	12·9	12·3
20.	Rohanakalan	1,372	12·9	14·1	13·8	16·5
21.	Daurala	1,422	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	1,524	11·1	11·2	11·2	10·2
23.	Lhaksar	1,524	9·2	9·7	11·0	9·5
24.	Maholi	1,524	10·4	11·5	12·0	11·2
25.	Raja-ka-Sahaspur	1,524	12·2	11·9	13·4	12·1
26.	Deoband	1,626	9·3	8·8	9·2	7·8
27.	Pilibhit	1,778	13·9	13·7	16·0	14·3
28.	Hardoi	1,829	8·6	9·6	9·6	8·8
29.	Iqbalpur	1,829	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur	1,829	8·0	8·0	8·3	8·6
31.	Dhampur	2,032	11·2	11·1	10·8	7·8
32.	Khatauli	2,032	N.A.	N.A.	N.A.	N.A.
33.	Simbhaoli	2,032	12·0	11·0	11·3	11·6
34.	Hargaon	2,642	N.A.	N.A.	N.A.	N.A.
35.	Mawana	3,048	9·3	9·0	9·7	9·4
36.	Shamli	3,048	8·2	8·5	8·8	8·0
37.	Seohara	3,251	6·2	5·9	5·5	5.1
38.	Gola	3,658	N.A.	N.A.	N.A.	N.A.

N.A.=Not Available.

Source—Factory Returns

TABLE VII-A

Utilisation of By-products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (Average of 5 seasons)			
			Production ('000 tonnes)	Used as fuel ('000 tonnes)	Saved & sold (tonnes)	Value realised Rs.
1	2	3	4	5	6	7
1.	**Doiwala***	528	31·22	31·22	Nil.	Nil
2.	**Aira**	660	45·10	45·10	Nil	Nil
3.	**Rosa**	737	33·14	33·13	Nil	Nil
4.	**Neoli**	1,270	41·46	41·12	333	3,733
5.	**Bagpat***	1,016	N.A.	N.A.	N.A.	N.A.
6.	**Bareilly**	1,016	50·72	N.A.	N.A.	35,887
7.	**Buland***	1,016	61·64	60·10	1,532	15,120
8.	**Panninagar**	1,016	47·48	47·48	Nil	Nil
9.	**Bijnor**	1,067	N.A.	N.A.	N.A.	N.A.
10.	**Modinagar***	1,067	46·44	46·44	Nil	Nil
11.	**Sakhotitanda**	1,118	N.A.	N.A.	N.A.	N.A.
12.	**Mohiuddinpur**	1,158	36·46	36·46	Nil	Nil
13.	**Raza***	1,168	65·88	N.A.	N.A.	N.A.
14.	**Bazpur***	1,219	63·72	52·25	11,470	11,760
15.	**Meerut**	1,219	N.A.	N.A.	N.A.	N.A.
16.	**Sarsawa**	1,219	6·65	6·65	Nil	Nil
17.	**Amroha**	1,255	79·88	79·88	Nil	Nil
18.	**Baheri**	1,300	70·28	70·28	Nil	Nil
19.	**Saharanpur**	1,321	63·62	62·68	933	14,967
20.	**Rohanakalan***	1,372	58·50	58·50	Nil	Nil
21.	**Daurala***	1,422	N.A.	N.A.	N.A.	N.A.
22.	**Kashipur**	1,524	98·70	95·17	3,537	63,087
23.	**Lhaksar***	1,524	69·22	69·22	Nil	Nil
24.	**Maholi***	1,524	66·40	65·94	585	8,283
25.	**Raja-ka-Sahaspur**	1,524	75·78	75·78	Nil	Nil
26.	**Deoband***	1,626	105·90	96·42	9,474	214,187
27.	**Pilibhit**	1,778	96·30	N.A.	N.A.	N.A.
28.	**Hardoi***	1,829	69·24	68·10	1,149	24,037
29.	**Iqbalpur***	1,829	N.A.	N.A.	N.A.	N.A.
30.	**Mansurpur***	1,829	98·44	98·14	302	5,873
31.	**Dhampur**	2,032	67·44	67·42	23	561
32.	**Khatauli***	2,032	94·38	91·68	2,708	N.A.
33.	**Simbhaoli**	2,032	77·14	N.A.	N.A.	985
34.	**Hargaon**	2,642	N.A.	N.A.	N.A.	N.A.
35.	**Mawana***	3,048	64·62	61·30	2,723	N.A.
36.	**Shamli***	3,048	148·38	148·38	Nil	Nil
37.	**Seohara**	3,251	N.A.	N.A.	N.A.	N.A.
38.	**Gola**	3,658	N.A.	N.A.	N.A.	N.A.
	TOTAL		1,934·13 (29 fys.)			

*Carbonation factories.
N.A.=Not Available.
Source—Factory Returns.

TABLE VII—B

Utilisation of By-products (Molasses)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Molasses (Average of 5 seasons)			
			Production ('000 tonnes)	Quantity utilised for distillery & trade (000 tonnes)	Surplus left ('000 tonnes)	Value realised ('000 Rs.)
1	2	3	4	5	6	7
1.	Doiwala*	528	3·24	2·62	0·62	23·98
2.	Aira	660	5·52	3·66	1·86	N.A.
3.	Rosa	737	3·42	3·42	Nil	20·32
4.	Neoli	1,270	4·64	4·64	Nil	23·88
5.	Bagpat*	1,016	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	1,016	5·94	5·06	0·88	31·32
7.	Buland*	1,016	5·08	5·08	Nil	26·12
8.	Panninagar	1,016	5·78	5·78	Nil	N.A.
9.	Bijnor	1,067	N.A.	N.A.	N.A.	N.A.
10.	Modinagar*	1,067	4·88	N.A.	N.A.	28·54
11.	Sakhotitanda	1,118	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	1,158	4·18	4·18	Nil	24·26
13.	Raza*	1,168	5·86	5·86	Nil	32·92
14.	Bazpur*	1,219	7·40	7·40	Nil	33·15
15.	Meerut	1,219	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	1,219	0·85	0·85	Nil	N.A.
17.	Amroha	1,255	9·36	N.A.	N.A.	N.A.
18.	Baheri	1,300	8·34	8·34	Nil	52·50
19.	Saharanpur	1,321	7·96	N.A.	N.A.	48·28
20.	Rohanakalan*	1,372	6·66	6·66	Nil	39·58
21.	Daurala*	1,422	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	1,524	11·70	7·45	4·25	44·97
23.	Lhaksar*	1,524	7·02	N.A.	N.A.	24·36
24.	Maholi*	1,524	4·82	4·82	Nil	28·60
25.	Raja-ka-Sahaspur	1,524	9·04	9·04	Nil	53·20
26.	Deoband*	1,626	10·26	6·10	4·16	54·32
27.	Pilibhit	1,778	11·54	N.A.	N.A.	56·18
28.	Hardoi*	1,829	5·18	N.A.	N.A.	N.A.
29.	Iqbalpur*	1,829	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur*	1,829	8·56	8·34	0·22	124·22
31.	Dhampur	2,032	7·92	7·92	Nil	32·52
32.	Khatauli*	2,032	8·70	8·70	Nil	54·70
33.	Simbhaoli	2,032	8·10	8·10	Nil	47·12
34.	Hargaon	2,642	N.A.	N.A.	N.A.	N.A.
35.	Mawana*	3,048	5·46	5·46	Nil	30·08
36.	Shamli*	3,048	14·16	14·16	Nil	83·60
37.	Seohara	3,251	N.A.	N.A.	N.A.	N.A.
38.	Gola	3,658	N.A.	N.A.	N.A.	N.A.
	TOTAL		201·57 (29 fys.)			

*Carbonation factories.
N.A.=Not Available.
Source—Factory Returns.

TABLE VII—C

Utilization of By-products (Press mud)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Press mud (Average of 5 seasons)			
			Production ('000 tonnes)	Sold or utilised as manure ('000 tonnes)	Surplus left ('000 tonnes)	Value realised ('000 Rs.)
1	2	3	4	5	6	7
1.	Doiwala*	528	7·82	Nil	7·82	Nil
2.	Aira	660	3·80	3·80	Nil	18·24
3.	Rosa	737	2·34	2·34	Nil	Nil
4.	Neoli	1,270	3·08	3·08	Nil	Nil
5.	Bagpat*	1,016	N.A.	N.A.	N.A.	N.A.
6.	Bareilly	1,016	4·42	N.A.	N.A.	0·20
7.	Buland*	1,016	15·36	Nil	15·36	Nil
8.	Panninagar	1,016	3·78	3·78	Nil	Nil
9.	Bijnor	1,067	N.A.	N.A.	N.A.	N.A.
10.	Modinagar*	1,067	11·98	Nil	11·98	Nil
11.	Sakhotitanda	1,118	N.A.	N.A.	N.A.	N.A.
12.	Mohiuddinpur	1,158	3·80	3·80	Nil	6·84
13.	Raza*	1,168	14·98	Nil	14·98	Nil
14.	Bazpur*	1,219	15·58	Nil	15·58	Nil
15.	Meerut	1,219	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa	1,219	0·45	0·45	Nil	N.A.
17.	Amroha	1,255	5·88	5·88	Nil	Nil
18.	Baheri	1,300	7·32	7·32	Nil	15·24
19.	Saharanpur	1,321	5·12	2·02	2·90	15·10
20.	Rohanakalan*	1,372	14·90	Nil	14·90	Nil
21.	Daurala*	1,422	N.A.	N.A.	N.A.	N.A.
22.	Kashipur	1,524	8·23	8·23	Nil	6·25
23.	Lhaksar*	1,524	17·36	Nil	17·38	Nil
24.	Maholi*	1,524	13·66	13·66	Nil	3·26
25.	Raja-ka-Sahaspur	1,524	5·56	5·56	Nil	1·52
26.	Deoband*	1,626	23·24	Nil	23·24	Nil
27.	Pilibhit	1,778	7·20	N.A.	N.A.	N.A.
28.	Hardoi*	1,829	13·34	N.A.	N.A.	3·56
29.	Iqbalpur*	1,829	N.A.	N.A.	N.A.	N.A.
30.	Mansurpur*	1,829	22·60	N.A.	N.A.	0·76
31.	Dhampur	2,032	5·26	5·26	Nil	Nil
32.	Khatauli*	2,032	22·58	Nil	22·58	Nil
33.	Simbhaoli	2,032	7·24	7·24	Nil	Nil
34.	Hargaon	2,642	N.A.	N.A.	N.A.	N.A.
35.	Mawana*	3,048	13·26	13·26	Nil	5·48
36.	Shamli*	3,048	38·62	Nil	38·62	Nil
37.	Seohara	3,251	N.A.	N.A.	N.A.	N.A.
38.	Gola	3,658	N.A.	N.A.	N.A.	N.A.
	TOTAL		318·76 (29 fys.)			

N.A.=Not Available.

Source—Factory Returns.

Note.—Factories marked with (*) are carbonation factories whose entire production of press mud is a waste.

TABLE VIII—A

Profit After Tax or Loss of the Factories During the Ten Years Ending 1961-62

(In lacs of Rs.)

Sl. No.	Name ot Factory	52-53	53-54	54-55	55-56	56-57	57-58	58-59	59-60	60-61	61-62	Total	Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Doiwala	0·03	0·60	—0·70	—0·26	0·92	3·22	1·91	3·56	2·03	0·70	12·01	1·20
2.	Aira	—2·38	—1·73	—1·63	1·75	7·20	0·62	1·97	3·13	7·53	3·72	20·17	2·02
3.	Rosa	4·32	5·28	0·49	—0·21	—1·55	—1·61	8·16	4·82	7·79	16·86	44·35	4·43
4.	Neoli	N.A.	N.A.	1·54	3·99	2·54	—2·72	—4·92	2·90	2·84	0·50	6·67	0·83
5.	Bareilly	N.A.	2·01	—0·87	4·78	—0·93	1·71	—5·59	4·20	—1·03	0·45	4·73	0·53
6. 7.	Buland Raza	12·29	4·76	12·60	13·01	10·05	—14·06	3·58	15·34	1·96	9·40	68·93	6·89
8.	Panninagar	—5·14	—0·63	—19·77	—3·51	2·02	—0·87	—3·72	2·31	6·92	—4·31	—26·70	—2·67
9.	Bijnor	—1·11	—1·34	—6·25	—1·63	—1·27	—1·30	N.A.	N.A.	N.A.	—6·90	—19·80	—2·83
10.	Sakhotitanda	—0·08	2·00	3·85	—0·91	0·38	—2·27	—2·53	0·78	—2·37	—2·77	—3·92	—0·39
11.	Mohiuddinpur	—0·54	9·50	7·70	4·41	9·29	5·71	1·26	1·63	1·20	0·52	40·68	4·07
12.	Meerut	—1·51	10·83	7·54	6·96	—0·17	9·70	6·01	5·44	3·66	2·07	50·53	5·05
13.	Amroha	8·80	9·90	1·31	8·44	15·88	N.A.	N.A.	N.A.	3·96	—1·79	46·50	6·64
14.	Baheri	4·99	0·75	1·47	4·36	7·44	2·60	4·18	9·25	4·70	5·13	44·87	4·49
15.	Saharanpur	—6·76	14·23	3·79	3·65	7·35	9·05	0·36	6·15	6·93	8·08	52·83	5·28
16.	Rohanakalan	5.33	12.80	7.54	3.38	0.66	0.99	3.85	5.34	1.94	N.A.	41.83	4.65
17. 18.	Kashipur Pilibhit	13·48	11·21	—2·01	4·57	8·80	—10·11	10·09	13·63	4·16	1·92	55·74	5·57
19.	Lhaksar	4·96	8·05	7·75	5·28	6·64	4·46	4·32	2·46	10·99	7·03	61·94	6·19
20.	Maholi	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	—6·05	9·97	9·90	2·70	16·52	4·13
21.	Raja-ka-Sahaspur	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	0·07	4·42	8·89	—1·07	12·31	3·08
22.	Deoband	12·88	10·62	12·13	14·39	15·85	5·24	1·53	10·52	11·49	13·59	108·24	10·82
23.	Hardoi	4·17	6·25	5·55	6·90	7·89	4·29	1·01	6·60	6·78	6·24	55·68	5·57
24.	Iqbalpur	4·15	—0·36	—13·49	—1·39	8·71	—0·88	—13·30	8·46	10·50	—2·89	—0·49	0·05

TABLE VIII-A—*contd.*

2	3	4	5	6	7	8	9	10	11	12	13	14
25. Mansurpur	1·78	7·24	3·40	7·06	4·92	—4·50	3·00	3·67	4·13	0·29	30·99	3·10
26. Dhampur	2·17	4·59	0·07	—1·68	—4·65	—1·29	—2·51	7·67	4·37	—3·11	5·63	0·56
27. Khatauli	6·18	8·48	9·31	10·16	8·71	9·77	9·16	12·73	13·23	7·43	95·16	9·52
28. Simbhaoli	1·76	6·53	4·24	6·96	3·99	8·00	0·62	4·04	3·89	2·26	42·29	4·23
29. Hargaon	8·72	11·10	8·72	12·73	20·41	18·44	17·75	18·09	26·96	14·98	157·90	15·79
30. Shamli	5·37	10·17	3·41	—2·47	2·01	12·80	9·38	9·29	1·10	35·85	15·21	1·52
31. Seohara	2·81	14·86	6·17	5·62	10·61	7·93	10·14	5·55	12·02	18·07	93·78	9·38
32. Gola	14·83	20·55	12·77	21·65	15·09	26·82	11·41	21·72	27·75	37·11	210·22	21·02
Average	3·62	6·49	2·55	4·60	5·63	3·06	2·37	6·79	6·59	3·24	1344·80	4·51

N.A.=Not Available.

NOTES:—(1) Information in respect of 6 factories *viz.*, Mawana, Daurala, Modinagar, Bazpur, Bagpat and Sarsawa is not available.

(2) Determination of income-tax on pofits is a very elaborate process and it has not been possible for the Committee to assess the exact position. Fifty per cent of the gross profits has been taken towards income-tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII—B

Profitability of the Factories in Different Capacity Slabs

(Amount in lacs of Rupees)

Sl. No.	Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available	Profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Profit or loss for the above period	Average profit or loss per year
1	2	3	4	5	6	7	8	9	10	11
(*a*)	*Factories with capacities between 500 and 749 tonnes*									
1.	Doiwala	5	0·59	0·12	5	11·42	2·28	10	12·01	1·20
2.	Aira	5	3·21	0·64	5	16·96	3·39	10	20·17	2·02
3.	Rosa	5	8·33	1·66	5	36·02	7·20	10	44·35	4·43
	No. of factories showing profit	3			3			3		
	Average Profit per year per factory (In lacs of Rs.)			0·81			4·29			2·55
(*b*)	*Factories with capacities between 750 and 999 tonnes*						—Nil—			
(*c*)	*Factories with capacities of 1000 tonnes and above*									
1.	Neoli	3	8·07	2·69	5	—1·40	—0·28	8	6·67	0·83
2.	Bareilly	4	4·99	1·25	5	—0·26	—0·05	9	4·73	0·53
4.	Buland Raza	5	52·71	10·55	5	16·22	3·24	10	68·93	6·8
5.	Panninagar	5	—27·03	—5·41	5	0·33	0·06	10	—26·70	—2·67
6.	Bijnor	5	—11·60	—2·32	2	—8·20	—4·10	7	—19·80	—2·83
7.	Sakhotitanda	5	5·24	1·05	5	—9·16	—1·83	10	—3·92	—0·39
8.	Mohiuddinpur	5	30·36	6·07	5	10·32	2·06	10	40·68	4·07
9.	Meerut	5	23·65	4·73	5	26·88	5·38	10	50·53	5·05
10.	Amroha	5	44·33	8·87	2	2·17	1·08	7	46·50	6·64

TABLE VIII—B—*contd.*

1	2	3	4	5	6	7	8	9	10	11
11.	Baheri	5	19·01	3·08	5	25·86	51·17	10	44·87	4·48
12.	Saharanpur	5	22·26	4·45	5	30·58	6·12	10	52·84	5·28
13.	Rohanakalan	5	29·71	5·94	4	12·12	3·03	9	41·83	4·65
14. 15.	Kashipur Pilibhit	5	36·05	7·21	5	19·69	3·91	10	55·74	5·57
16.	Lhaksar		32·68	6·54	5	29·26	5·85	10	61·94	6·19
17.	Maholi	N.A.	N.A.	N.A.	4	16·52	4·13	4	16·52	4·13
18.	Raja-ka-Sahaspur	N.A.	N.A.	N.A.	4	12·31	3·08	4	12·31	3·08
19.	Deoband	5	65·87	13·17	5	42·37	8·47	10	108·24	10·82
20.	Hardoi	5	30·76	6·15	5	24·92	4·98	10	55·68	5·57
21.	Iqbalpur	5	—2·38	—0·48	5	1·89	0·38	10	—0·49	—0·05
22.	Mansurpur	5	24·40	4·88	5	6·59	1·32	10	30·99	3·10
23.	Dhampur	5	0·50	0·10	5	5·13	1·05	10	5·63	0·56
24.	Khatauli	5	42·84	8·57	5	52·32	10·46	10	95·16	9·52
25.	Simbhaoli	5	23·48	4·70	5	18·81	3·76	10	42·29	4·23
26.	Hargaon	5	61·68	12·34	5	96·12	19·22	10	157·80	15·78
27.	Shamli	5	18·49	3·70	5	—3·28	—0·66	10	15.21	1·52
28.	Seohara	5	40·07	8·01	5	53·71	10·74	10	93·78	9·38
29.	Gola	5	84·89	16·98	5	125·33	25·07	10	210·22	21·02
	No. of factories showing loss	3			5			4		
	No. of factories showing profit	24			24			25		
	Average Profit per year per factory (In lacs of Rs.)			5·01			4·46			4·73

TABLE VIII—C

***Dividends Paid on Ordinary Shares by Factories Since** 1952-53*

(Per cent paid up Capital)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
1.	Doiwala@										
2.	Aira	..	..	..	..	..	..	11·20	20·00	20·00	20·00
3.	Rosa	..	·0	2·50	..	..	2·50	..	..	..	..
4.	Neoli	..	..	6·00	10·00	10·00	..	..	..	..	..
5.	Bagpat									..	..
6.	Bareilly	..	..	..	..	..	..	..	..	..	..
7.	Buland	10·00	10·00	10·00	15·00	15·00	12·50	12·00	12·50	10·00	10·00
8.	Raza	10·00	7·50	10·00							
9.	Panninagar@										
10.	Bijnor@										
11.	Modinagar	N.A.	N.A.	6·00	6·00	7·00	9·00	12·00	17·00	15·00	12·00
12.	Sakhotitanda	N.A.	N.A.	N.A.	8·00	8·00	..	..	..	..	..
13.	Mohiuddinpur@										
14.	Bazpur							..	..	..	..
15.	Meerut	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
16.	Sarsawa										
17.	Amroha@										
18.	Baheri	..	..	4·50	10·00	17·50	10·00	15·00	22.00	20.00	20·00
19.	Saharanpur	..	..	..	..	..	6·00	11·00	25.00	25.00	30·00
20.	Rohanakalan	N.A.	12·00	12·00	15·00	6·00	6·00	9·00	11.00	11.00	N.A.
21.	Daurala	19·06	N.A.	9·00	10·00	8·00	8·00	10·00	12·00	13·00	13·00
22.	Mawana										

TABLE VIII—C—*contd.*

2	3	4	5	6	7	8	9	10	11	12
23. Kashipur 24. Pilibhit	8·00	..	N.A.	6·00	9·00	..	..	12·00	10·00	8·00
25. Lhaksar	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
26. Maholi	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
27. Raja-ka-Sahaspur@										
28. **Deohand**	**15.00**	**15·00**	..	**20·00**	**17.50**	**12·50**	**12·50**	**20.00**	20·00	**20·00**
29. Hardoi	15·00	15·00	..	20·00	25·00	15·00	10·00	18·00	15·00	15·00
30. Iqbalpur	..	..	..	..	..	..	..	..	12·00	—
31. Mansurpur	15·00	20·00	20·00	8·00	18·00	18·00	18·00	18·00	18·00	—
32. Dhampur	..	..	..	..	8·00	..	..	22·00	22·00	—
33. Khatauli	N.A.	15·00	20·00	15·00	15·00	15·00	25·00	30·00	20·00	15·00
34. Simbhaoli	20·00	25·00	33·00	..	27·50	26·25	12·00	43·75	31·25	20·00
35. Hargaon	11·00	11·00	11·00	11·00	12·50	12·50	**18·25**	**20·00**	20·00	20·00
36. Shamli	12·00	10·00	12·00	7·50	7·50	9·84	15·00	15·00	12·00	—
37. Seohara	25·00	25·00	25·00	30·00	50·00	50·00	72·50	72·50	72·50	72·50
38. Gola	15·00	15·00	15·00	15·00	15·00	15·00	15·00	29·00	29·00	14·00

@These factories are either partnership concerns or sole traderships, so that the question of dividends has not risen.
N.A.=Not available.
..=Nil

NOTE:—The dividends upto 1957-58 are free of tax and afterwards these are subject to income tax.

EAST UTTAR PRADESH

1. GENERAL ASPECTS

1.1 The East U.P. region, in so far as sugar industry is concerned, covers the 9 districts of Deoria, Gorakhpur, Basti, Gonda, Bahraich, Barabanki, Faizabad and Jaunpur but cane supplies are drawn from 4 more districts viz. Sultanpur, Azamgarh, Varanasi and Ballia. The Biswan factory situated in Sitapur district has been taken by the Committee in East U.P. although since 1964 it has been included by the Government of India in the West U.P. region. The above named districts broadly lie between longitudes 81° and 85° and north latitudes 25° and 28° and thus fall in the sub-tropical belt. Rainfall in the region is on an average 102 cms. confined within months of June and September with maximum precipitation in August and September. There is also 5-8 cms. of winter rain during December and January. Climate is rather extreme, temperature reaching a maximum of 45°C in summer and minimum of 3.5°C in winter.

Relative humidity during the year varies between 25 and 85. The soil is fertile being generally light loam to loam. Some soils are clayee and part of Deoria district has *Bhat* soil which has a good moisture retention capacity. Certain tracts called *Terai* are below the Himalayan ranges where water table is high. The region is susceptible to floods. Sometimes drought also occurs.

1.2 **Density of population, size of holdings, agricultural and industrial employment and economic condition of people**

The density of population in East U.P. is high being 310 per square kilometre, the density in the 8 sugar districts being 345 per square kilometre, percentage of rural population being 92.6, of workers to total population 42.6 and of agricultural workers to total workers 82.3. Industrial employment per lac of population is only 3,243. Holdings are small. In the Deoria district which has a concentration of sugar factories the percentage of holdings upto one acre is 47 per cent, from 1-3 acres 29 per cent, from 3-5 acres 11 per cent, from 5-10 acres 9 per cent and above 10 acres 4 per cent.

There is a general paucity of industries other than sugar. Capital invested and production worth are lower substantially in respect of the sugar industry as will be seen from the figures given in the following table :

	Deoria		Basti		Gonda		Gorakhpur	
	Sugar	Others	Sugar	Others	Sugar	Others	Sugar	Others
1. No. of factory units .	14	3	4	..	4	6	5	3
2. Capital invested (in lac rupees)	466	20	240	..	197	7	229	57
3. Employed workers (in hundred) .	126	2	33	..	34	1	56	14
4. Pay/Wages (in lac rupees) .	122	2	28	..	30	1	54	15
5. Production worth (in lac rupees) .	1,280	10	302	..	313	15	551	74

Source— C. M. I. Bulletin 1958.

Agricultural output is rupees 188.4 per acre only. Industrial output is of the value of Rs. 24.57 per capita. Per capita income (1960-61) has been estimated by the Committee at Rs. 258.65 at current prices on the basis of certain income data published by the National Council of Applied Economic Research.

(Figures contained in the above two paragraphs have been supplied by the Directorate of Economics and Statistics, U.P., Lucknow.)

It will be seen that the region is backward economically and there is no major industry located in it except sugar. The sugar industry in the region sustains about a million cultivators and nearly 35,000 factory workers besides large number of persons carrying on small trades in the vicinity of the factories. Assuming an average family of five persons the sugar industry in the region supports about five million people. It pays about Rs. 16 crores annually to the cane growers of the region and the Central and State Governments derive an income from it of about Rs. 10 crores as Excise Duty and Rs. 2 crores as Purchase Tax respectively. It, therefore, appears absolutely necessary to develop this region in order to bring up the general economic level and promote the well-being of a large number of cultivators. By far, the only large industry which can suitably be developed in this region is the sugar industry, being based on the available supplies of cane which can be further augmented.

1.3 Establishment and growth of the Sugar Industry in East U.P.

Sugarcane has been grown in this region for centuries. This crop more than any other, withstands the hazards of weather and natural calamities to which this region is prone. It is also the chief cash crop of the region.

The area under cane in 1961-62 was roughly 10.6 per cent of the area under cane in the whole of India.

Ready availability of cane and cheap labour have contributed to the establishment of the sugar industry in this region. Even prior to grant of protection to the sugar industry in 1932, there were 11 sugar factories working in this region. The protection gave further fillip to the industry and within a few years after 1932, the total number of factories which came to be established in the region was 41. The expansion was rather rapid and a large number of small sized units were set up, some of them close to one another. The number of sugar factories working before and after 1932 was as follows :

Year	No. of working factories
1931-32	11
1932-33	23
1935-36	35
1938-39	38
1941-42	38
1944-45	37
1947-48	34
1950-51	33
1953-54	32
1956-57	32
1957-58	33
1959-60	33
1962-63	33

It will be seen that five factories have not been working since 1950-51. Some of them were shifted to other locations in India and some are lying idle. Thus, for more than a decade about 33 factories have been working in the region. While several new factories have come up in other parts of India during the last few years, no new factory has been set up in East U.P.

1.4 Distribution of sugar factories in East U.P.

The distribution of the 33 factories working at present in the various districts and their existing daily cane crushing capacities are as follows :

District-wise Distribution of Sugar Factories in East U.P.

Sl. No.	Name of the District	Name of Factory	Existing daily cane crushing capacity in tonnes (1963-64 season)
1.	Bahraich	Jarwal Raoad	1,118
2.	Barabanki	Burhwal	813
		Barabanki	806
3.	Basti	Khalilabad	559
		Munderwa	711
		Walterganj	772
		Basti	1,025
4	Deoria	Kathkuiyan	610
		Chhitauni	813
		Khadda	773
		Gauri Bazar	750
		Ramkola (MK)	791
		Purtabpore	904
		Baitalpur	914
		Deoria	965
		Bhatni	738
		Lakshmiganj	774
		Padrauna	1,016
		Captainganj	970
		Seorahi	940
		Ramkola (P)	1,524
5.	Faizabad	Motinagar	1,321
6.	Gonda	Babhnan	813
		Tulsipur	904
		Balrampur	904
		Nawabganj	1,524
7.	Gorakhpur	Siswa Bazar	559
		Pipraich	813
		Ghughli	1,016
		Anandnagar	1,016
		Sardarnagar	2,286
8.	Jaunpur	Shahganj	1,016
9.	Sitapur*	Biswan	1,219

**Notes*—The Biswan factory was formerly taken in East U. P. but the Government of India has now included it in West U.P.

1.5 System of cane marketing and cane development in U.P.

There is an elaborate system of cane marketing and cane development in U.P. the details of which are given in Appendix I.

The extent of development work done up to 1961-62 and the amount of purchase tax collected and spent on development is also shown in Appendix I.

2. TECHNICAL ASPECTS

2.1 Area under cane and yield per acre

Each sugar factory in U.P. has been allotted to it a specified area from which it can draw its cane supplies, called the reserved area. The position with respect to the area under cane is given in Table I-A and estimated yield per acre is given in Table I-B.

It will be seen from the figures given in these tables that (i) the area under cane has shown wide fluctuations in the last four years being the highest in 1961-62 season and the lowest in 1962-63 season and (ii) the yield per acre ranged between 13 to 17 tonnes. The average yield of sugarcane per acre in the areas reserved for sugar factories in Uttar Pradesh is estimated on the basis of crop cutting experiments by the Cane Development Department of U.P. Government.

2.2 Cane supplies to sugar mills

The percentage utilisation of cane for white sugar manufacture is given in Table I-C, the supplies made to sugar factories in Table I-D and the percentage of cane supplied at the gate and road and rail centres in Table I-E.

Supplies of cane to sugar mills in the region have generally varied from 38 per cent to 51 per cent of the total cane produced in the reserved area. In the year of high production *viz.* 1960-61 the supplies in the sugar mills in Jaunpur and Basti districts were, however, below 40 per cent of the total production with correspondingly larger proportion of supplies for *gur* manufacture. In the year 1962-63, which is the year of high *gur* price, supplies dwindled to below 40 per cent in all the districts except Gorakhpur and Deoria. Supplies of almost all factories were adversely affected in 1962-63 with corresponding increase for *gur* manufacture. The total supplies to factories have varied from 2,459 thousand tonnes to 4,868 thousand tonnes being the highest in the year 1960-61. The supplies were the lowest in 1962-63 due to reduction in acreage on account of 10 per cent cut imposed on production by the Government in view of the surplus position then obtaining, reduction in yield and reduction in supplies to factories due to diversion of cane for *gur* manufacture.

It will be seen from Table I-E that rail centres exist only in about 14 factories out of 33 in East U.P. The percentage of rail cane varies from 10 to 38 per cent. Half of the total number of factories have gate and road cane only which is a happy position. With intensive development of cane cultivation it should be possible to increase gate supplies and reduce the rail and long distance road centres, thus ensuring fresher supplies at minimum transport cost.

2.3 Irrigation, application of manures and fertilisers and supply of seed

The raising of a good crop of sugarcane calls for particular attention in several directions. It is a crop which needs plenty of plant food, water-

and sunshine. The crop is also susceptible to various pests and diseases and needs to be protected therefrom. As it exhausts the soil of its nutrition, the soil has to be continuously replenished with manures and fertilisers and for this proper absorption by the sugarcane plant, liberal irrigation is essential.

The existing position in the various factories of East U.P. in respect of irrigation, supply of manures and fertilisers and supply of seed is given in Tables II-A, II-B and II-C respectively.

The actual requirements in respect of each item of development for obtaining proper yields and supplies of cane are also indicated in these tables.

It will be seen from Table II-A that the area irrigated (commanded area) to total culturable area in reserved zones of East U.P. is only about 43 per cent which is quite inadequate. The actually irrigated area, is however, much less. The existing means of irrigation in the shape of canals, State tubewells, about 1,600 private tubewells and about 8,000 masonry sets are insufficient.

It will be seen that the East U.P. factory zones still require nearly 1,500 State tubewells, about 1,600 private tubewells and about 8,000 masonry wells. The cost of constructing 1,500 State tubewells will be about 12 crore of rupees.

Private tubewells are constructed by the growers themselves and the loan requirement at Rs. 6,000 each for 1,569 tubewells will be Rs. 94.14 lacs whereas subsidy at Rs. 1,500 each will be Rs. 23.54 lacs. Loan requirement for 7,980 masonry wells, with boring and persian wheel at Rs. 2,000 each will amount to Rs. 159.60 lacs. The total amount of subsidy at the rate of Rs. 475 on each masonry well with boring and persian wheel will be Rs. 37.90 lacs. Thus the total amount of loan and subsidy will be Rs. 253.74 and Rs. 61.44 lacs respectively.

As against this requirement the State Irrigation Department have a plan for constructing 553 tubewells out of which 207 only are proposed to be constructed in the first phase. The Gandak Canal Project which is expected to be completed in about 10 years time will cover some areas of Seorahi, Ramkola, Padrauna and Lakshmiganj factories only.

It was brought to the notice of the Committee that some tubewells in these areas are not being constructed in view of the Gandak Canal Project coming up. The Committee feels that even so the tubewells may be constructed as the project is still a long way off.

Table II-B shows the position with regard to requirement of manures and fertilisers according to only 60 lbs. nitrogen per acre for the existing acreage under cane and the provisions made by the Cane Development Councils of each factory. With the inevitable increase in cane acreage for increased production of sugar the requirement would be even more.

It will be seen that the gross requirement for chemical fertilisers works out to 60,600 tonnes; for cake and sterameal to 45,450 tonnes; and green manure seed 2,266 tonnes. At present the cultivators are using only 20 per cent of this requirement through the cane unions. Use of fertilisers should increase with the development of irrigation and through extension work of the Cane Development Department.

Additional requirement of fertilisers should not require any financial assistance as the cost of fertilisers is payable by the cane unions in 18 months from the date of receipt and the union should be able to distribute the fertilisers and recover the amount from the cultivators within this period. Funds will, however, be required for additional quantity of cakes and sterameal. For 22,725 tonnes of these manures a total loan of about Rs. 85 lacs will be needed. Funds for distribution of *sanai* will amount to about Rs. 5 lacs. Thus additional requirement of funds will amount to Rs. 90 lacs only.

Table II-C shows the requirement of seed. It will be seen that out of 8,54,400 tonnes of actual requirement of seed for East U.P. that arranged by the Cane Societies is only 1,70,900 tonnes. The balance 6,83,600 tonnes is met by the growers themselves.

The Cane Development Department has been keeping one per cent of the plant cane under seed nurseries. From the current sowing season 1963-64 this area is being doubled. Nurseries will now be kept in 2 per cent area to meet the seed requirement of 20 per cent of the area under plant cane. The cane growers will themselves raise cane seed for the remaining 80 per cent area. In this way total cane seed can be replaced in 5 years time. Funds required for the distribution of cane seed will be provided by the cane unions but subsidy on about 5,000 acres of additional nurseries @ Rs. 30 per acre *i.e.*, Rs. 1.5 lacs will have to be found. In addition cane seed subsidy on about 85,820 tonnes additional cane seed @ Rs. 6.70 per tonne (25 paise per maund) *i.e.*, Rs. 5.75 lacs will be needed. Total subsidy requirement in addition to the present allotment will thus be Rs. 7.25 lacs yearly.

The seed requirement has been worked out on the basis that the area under plant cane should be 70 per cent of the total area in case of all the factories (except Shahganj where very little ratoon is kept). Seed rate has been taken at 2 tonnes/acre.

2.4. Means of Communication

Table II-D shows the position with regard to the means of communications at present available in respect of *pucca* roads. Further requirements in respect of *pucca* roads, bridges and culverts are also shown.

It will be seen that the East U.P. region is not very well connected with *pucca* roads and link roads are fewer still. This will be clear from the fact that only 2,370 km. roads exist in the factory areas which are mostly main roads of the P.W.D. Minimum additional requirement of the factory zones is 3,119 kms. This will cost Rs. 1,715.45 lacs at Rs. 55,000 per km.

As regards bridges about 110 big bridges will be required and if the cost is estimated on an average at Rs. 60,000 the total will be Rs. 66 lacs. Cost of 4,247 culverts at Rs. 3,000 each will come to Rs. 127.41 lacs. Thus the total estimated cost of all the works will be Rs. 1,715.45 lacs+ Rs. 66 lacs + Rs. 127.41 lacs = Rs. 1,908.86 lacs or say Rs. 20 crores. The requirements have been worked out on the basis of demands communicated by the factories as well as the District Cane Officers.

2.5. Duration of season, cane crushed, sugar made and average recovery

The position with respect to average duration of season, cane crushed, sugar produced and average recovery recorded during the preceding ten years is as follows :

Year	Averaege duration (22 hrs).	Cane Crushed (lac tonnes	Sugar made (lac tonnes)	Average recovery per cent cane
1	2	3	4	5
1953-54	71	17·59	1·74	9·89
1954-55	117	31·17	3·08	19·86
1955-56	103	27·02	2·70	0·00
1956-57	134	35·31	3·33	9·42
1957-58	119	32·98	3·27	9·92
1958-59	128	36·22	3·54	9·78
1959-60	149	42·51	4·11	9·68
1960-61	166	48·51	4·68	9·65
1961-62	143	41·48	3·94	9·50
1962-63	84	24·52	2·43	9·92

It will be seen from the above that the cane crushed and duration of season have varied between wide limits. The recovery has shown a decline over a number of years prior to 1962-63 when it revived due to a very short season.

2.6 Sugar production

The position with regard to the number of working factories in East U.P., registered capacity, production of sugar in tonnes and sugar produced per 100 tonnes of registered capacity is shown below :

Year	No. of working factories	Total regis- tered cane crushing capacity per day in tonnes	Produc- tion of sugar in tonnes	Produc- tion of sugar per 100 tonnes registered capacity (tonnes),
1	2	3	4	5
1950-51	33	29,479	228,518	775·2
1951-52	32	29,174	270,602	927·5
1952-53	32	29,174	293,089	1,004·6
1953-54	32	29,174	174,132	596·9
1954-55	32	29,174	307,328	1,053·4
1955-56	32	29,174	270,812	928·3
1956-57	32	29,174	332,955	1,141·3
1957-58	33	30,512	326,985	1,071·7
1958-59	33	30,512	354,372	1,161·4
1959-60	33	30,738	411,436	1,338·5
1960-61	33	31,421	467,970	1,489·0
1961-62	33	31,241	415,026	1,320·8
1962-63	33	31,572	245,494	777·6

Maximum production of sugar in the region was 4.70 lac tonnes in 1960-61. The production per 100 tonnes of registered capacity has fluctuated considerably from 596.9 tonnes to 1,489.3 tonnes, the maximum being in 1960-61 when the duration of season was the longest.

2.7 The age of the factory plants, their capacities and present condition of equipment

The following table gives the age of the various plants and their capacities :

Sl. No.	Name of Factory	Year of establishment	Age in 1963 (years)	Original capacity (tons/day)	Existing daily cane crushing capacity in tonnes (licensed) 1963-64 season	Actual max. crushing rate per 24 hours operation attained in 1961-62 or 1962-63
1	2	3	4	5	6	7
1.	Khalilabad . . .	1936	27	550	559	685
2.	Siswabazar . . .	1932	31	400	559	809
3.	Kathkuiyan . . .	1933	30	400	610	622
4.	Munderwa . . .	1932	31	450	711	790
5.	Bhatni	1921	42	500	738	889
6.	Lakshmiganj . . .	1928	35	450	744	820
7.	Gatri Baazar . . .	1916	47	300	750	794
8.	Walterganj . . .	1932	31	400	772	825
9.	Khadda	1933	30	400	773	658
10.	Ramkela (MK) . .	1932	31	500	791	831
11.	Barrabanki* . . .	1945	N.A.	400	806	866
12.	Chhitauni	1934	29	728	813	787
13.	Burhwal	1931	31	180	813	747
14.	Pipraich	1932	31	400	813	918
15.	Babhnan	1931	32	450	813	840
16.	Purtabpore . . .	1903	60	172	904	960
17.	Tulsipur	1936	27	700	904	1,099
18.	Balampur	1933	30	700	904	1,014
19.	Baitalpur	1933	30	600	914	906
20.	Secrahi	1914	49	400	940	1,085
21.	Deoria	1936	27	500	965	943
22.	Captainganj . . .	1934	29	500	970	1,070
23.	Shahganj . . .	1932	31	500	1,016	1,023
24.	Ghugli	1926	37	N.A.	1,016	903
25.	Padrauna	1923	40	500	1,016	1,076
26.	Anandnagar . . .	1932	31	350	1,016	1,018
27.	Basti	1928	35	400	1,025	954
28.	Jarwal Road	1933	30	400	1,118	962
29.	Biswan	1934	29	300	1,219	930
30.	Motinagar** . . .	1947	N.A.	1,000	1,321	1,351
31.	Navabganj . . .	1932	31	750	1,524	1,274
32.	Ramkola (P) . . .	1932	31	800	1,524	1,614
33.	Sardarnagar . . .	1925	38	754	2,286	2,297

*Shifted from Aishbagh Lucknow.

**Shifted from Gutaiya, Kanpur.

It will be seen from the above that whereas most of the plants are over 25 years age, Purtabpore is the oldest being 60 years, Seorahi 40, Gauri Bazar 47, Bhatni 42, and Padrauna 40 years old. The rest are between 25—38 years old. Most of them are just carrying on somehow with heavy repairs and renewals.

As originally installed, 23 out of 33 factories had capacities equal to and lower than 500 tons/day, nine were between 500-800 and only one was of 1,000 tons capacity. Each of them subsequently expanded its capacity and now the distribution in the various capacity ranges is as follows

550—800 tonnes	10
801—1000 tonnes	11
1001—1200 tonnes	6
1201—1500 tonnes	2
Above 1500 tonnes	3

The expansions have not been considerable and such expansions as have taken place have generally been done in a haphazard manner. The maintenance of the equipment did ot appear satisfactory and reflected a rather poor standard of technical background.

The Committee invited representatives from a number of factories and also inspected the machinery and layout of some of them. The Committee found that some of the factories are too closely situated to each other and the layout in several cases was very unsatisfactory. Some of them do not have proper marshalling yards and approach roads for cane and the labour colony and other amenities are not up to standard. The factory buildings are very old. The arrangement of machinery is not streamlined. Most of the plants being steam driven have a net work of pipes and belts all over which have made them congested and inconvenient for operation affecting output and efficiency. They present a striking contrast to the modern streamlined plants.

It is observed that the equipments in East U.P. factories are old, outmoded and inefficient, as will be clear from the following analysis.

It will be seen from Table III-A that the milling plants of several factories have only one set of knives, the knife sets are generally low powered, the mills are driven by steam engines, instead of the more compact and more efficient steam turbines, the power in the engines is inadequate and the journal sizes are small, as a result of which the mills cannot be properly loaded to obtain high extraction.

Most of the plants below 1,000 tonnes capacity have only 14 rollers and are capable of extension to 17 or 18 rollers. The III-B will show that out of 33 plants, 20 are fully steam driven units and 13 have semi-electric drive (some of them only partially).

Most of the factories have in spite of small capacities more than three boiler of small size. Except two factories which have boilers of 190-200 p.s.i. pressure, all have boilers of 160 p.s.i. pressure instead of the modern boilers of 280-300 p.s.i. working pressure. Five of them have boilers of 110-125 p.s.i. working pressure, super heaters and economisers are generally absent.

As regards the equipment in the boiling house Table III-C i, ii, iii & iv will show that 15 factories have manually operated weighing or measuring equipment, several factories have horizontal type of juice heaters, only five factories have vapour line juice heaters sulphitation tanks in all except two are of batch type; filtration is also of batch type in all except seven factories; 13 factories still have triple effect evaporators and vapour bleeding is practised in only 8 factories; except six all factories have coil pans to the extent of 18-75 per cent of the total pan capacity; only seven factories have adequate heat exchanger capacity in low grade crystallisers and except 2 factories none has high speed centrifugals; even amongst the ordinary centrifugals most of them are small sized *viz.* 30″ × 18″ or 36″ × 18″.

2.8 Working results

The data with respect to (i) cane quality, (ii) time account, (iii) recovery and total losses and (iv) fuel consumption are given in Tables IV-Ai, ii, iii, IV-Bi, ii, IV-Ci, ii, iii and IV-Di, ii respectively.

(i) *Cane Quality*

It will be seen from Tables IV-Ai, ii & iii that the average seasonal pol. per cent cane in the last four years has varied from about 11.7 to 13.4 with primary juice purity variation from 81.3 to 87.2. A large majority of factories have had generally pol per cent cane of the order of 12.0—12.5 and primary juice purity 83 to 86. Factories which have recorded comparatively better cane quality, are Gauri Bazar, Babhnan, Barabanki, Biswan, Basti and Motinagar.

The cane quality is the most important factor for the economic working of the sugar mills. The variation in pol per cent cane within the region being 11.77 to 13.44 there appears to be a considerable scope for improving the quality of cane. Efforts will have to be concentrated to develop cane varieties with low fibre and high sugar content.

Fibre per cent cane is in general around 15-16 though in some years and in some factories it has been around 14 per cent and 18 per cent also. The high fibre which is so far burnt away in the boilers can be saved and utilised for the manufacture of fibre based products. The high fibre can compensate for low sugar in cane if it is saved and utilised for the production of paper pulp, board etc.

(ii) *Time Account*

Tables IV-Bi & ii show the time account. It will be seen that excluding the year 1962-63, the duration of season in all factories except Khalilabad, Balrampur, Motinagar, Nawabganj, Burhwal, Shahganj, Bhatni and Babhnan has generally been above 150 days.

The number of hours lost to total available are quite high in all factories. The normal time loss should not exceed 10—12 per cent but it will be seen that in almost all factories it is considerably above this figure, in some factories being 25—30 per cent and even as high as 46.9 per cent in one case.

This shows that the situation in East U.P. region calls for urgent need for renovation and modernisation of the plants and appointment of suitably qualified technical personnel to look after the modernised units.

(iii) *Recovery and Total Losses*

Tables IV-Ci, ii & iii show the position of recovery and total losses. It will be seen that while in the factories which have good cane quality *viz.*

Gauri Bazar, Biswan, Babhnan, Basti and Motinagar, the average seasonal recovery has been generally above 10 per cent (Barabanki has lost the advantage of good cane by having very high total losses). The rest of the factories have had recoveries appreciably below 10 per cent.

Total losses in most factories range between 2.5 to 3.0. Factories recording very high losses (around 3.0) are Tulsipur, Barabanki, Biswan, Bhatni, Padrauna, Kathkuiyan and Khadda. The factories which have recorded the lowest losses 2.2 to 2.4 are Shahganj and Basti. In the matter of reduced overall extraction the number of factories in the various efficiency groups are as follows :

Red. Overall Extraction	No. of Factories
78—82	10
82—84	14
Above 84	6

It will thus be seen that very few factories (only about 6) have good efficiency, 14 factories have average or medium efficiency and as many as 10 have very poor overall efficiency.

The break-up of the total losses shows that the major losses are occurring generally in milling and molasses. The poor mill extraction is due to the milling units being old, outdated and inadequately powered and also due to over capacity crushing. Inadequate preparatory devices, small journal sizes, insufficient power in the engines put a limit to achieving high extraction at the mills. The old type of milling units which are low set and have juice tanks and pumps in pits and with cush cush strainers and elevators as is the case with most of the plants in this region easily give rise to insanitary conditions and are a source of sugar loss.

The heavy losses in the boiling house relate to the losses in clarification, press mud, molasses and unknown. These are also mostly due to the use of old, outmoded and inefficient equipment as most of the factories have batch type reaction vessels, clarifiers and filtration equipment as against modern installations of continuous type which give better efficiencies. Sugar losses in molasses are also high both on account of higher production and high purity of molasses. The general level of purity of the exhaust molasses is 36–38 units as against a normal value of 30–32 units easily obtainable in plants with reasonably modern equipment and good operating techniques.

Almost all of these factories have old and obsolete design vacuum pans with very poor circulation characteristics. Coil pans are worked with low pressure steam. The central vacuum system gives poor and fluctuating vacuum conditions and these with low pressure and fluctuating steam supplies result in inefficient pan boiling which is the root cause for poor exhaustion of molasses.

Many factories do not have modern design low grade crystallisers with water cooling and reheating systems. The position of the crystallisers with respect to the pans is also defective in most cases affecting proper and quick flow of massecuite by gravity nor any mechanical means to facilitate dropping of tight massecuites. The centrifugal station is also far from satisfactory in several factories. The centrifugals are small sized, belt or water driven with low gravity factors. Efficient separation of final molasses does not take place and the recirculation of molasses affects exhaustion of final molasses adversely.

(iv) *Fuel Consumption*

Tables IV-Di & ii give the position with regard to fuel consumption. It will be noted that in spite of a high fibre content (average 15-16 per cent), all factories except Sardarnagar have not only consumed their entire production of bagasse but have consumed extra fuel. The factories which have consumed nominal extra fuel are Khalilabad, Gauri Bazar, Shahganj, Balrampur and Nawabganj. Except for Sardarnagar the total fuel consumption in terms of bagasse has varied from around 33 to 44 per cent on cane. In a large majority of cases it has been 35 to 40 per cent.

In the case of an old factory if proper measures for steam and fuel economy are adopted the fuel consumption should not exceed 28 per cent in terms of bagasse but it will be seen that in a large majority of cases in East U.P. it is between 35–40 per cent and in some cases it even exceeds 40 per cent. The factories in East U.P. are thus in general losing considerably in fuel account.

The main reasons for this loss are the old type, low working pressure boilers with no heat recovery systems resulting in poor efficiencies and wastage of fuel.

Besides inefficiency on the steam generation side, the consumption in the old type prime-movers is high and so is the case with the heat-exchangers in the boiling house where also the heat economy measures are not adopted.

In view of the need for conserving the fuel resources of the country and finding raw material for paper industry saving as much bagasse as possible is essential. It has a twofold advantage *viz.* direct saving in the cost of production and saving of a valuable raw material for cellulose based industries.

A study of the foregoing paragraphs in regard to condition and nature of plant and equipment and the working results of East U.P. factories will show that almost all the plants require a considerable degree of modernisation.

Table V gives particulars of the capacity to which the factories should be extended as intimated by the factories themselves and as recommended by Cane Commissioner, U.P. in the light of possible cane potential. Financial requirements for expansion and/or modernisation as estimated by the factories are also given.

2.9. Labour strength and productivity

Table VI-A shows the labour strength actually employed, the labour considered surplus and the labour that would become surplus when schemes of modernisation become effective.

It will be seen that in more than half the number of factories, there is an appreciable number of surplus labour even at present and that there would be quite a large number of surplus labour (986 skilled and 2,990 unskilled) after effecting modernisation.

Table VI-B shows the productivity of each factory in terms of man days per tonne of sugar for four years. It will be seen that except in eight factories *viz.* Khalilabad, Gauri Bazar, Babhnan, Shahganj, Biswan, Anandnagar, Motinagar and Ramkola (P) where the productivity is reasonable *viz.*, 9.0–12.5 man days per tonne of sugar produced, in all others the productivity is considerably low *viz.* from 12.5 to 26.1. This shows that the labour strength in most of the factories is higher than desirable from economic considerations.

2.10. Utilisation of by-products

Tables VII-A, VII-B and VII-C show the position with respect to utilisation of by-products.

It will be seen that molasses is almost entirely used for the production of industrial alcohol and is supplied by factories to distilleries at Government controlled price bringing no extra return to the sugar factories other than what has been already allowed in the fair ex-factory selling price of sugar. The revenue from the quantities allowed to some factories for free sale is not considerable.

The press mud of sulphitation factories is given to the cultivators for manurial purposes either free of cost or at nominal price. The press mud of carbonation factories has no utilisation.

As regards bagasse almost all factories are using extra fuel and do not save any bagasse except in a few cases, the income from the sale of which is negligible. The possibilities for the utilisation of molasses and press mud in a manner to reduce the cost of production to any appreciable degree are remote. Only in respect of bagasse, however, there is a tremendous scope for saving substantial quantities in view of high fibre content of East U.P. cane, by adopting suitable means of steam and fuel economy and utilising the surplus bagasse for new centrally located paper or board projects. The potential availability of bagasse for such industries on the basis of substitution by coal or furnace oil is great.

3. ECONOMIC ASPECTS

3.1. Financial Set-up

The nature of ownership, the share capital, the reserves and net worth of the 33 East U.P. sugar factories as given in their Balance Sheets for 1961-62, are as follows :—

(In lacs of Rupees)

Name of Units	Paid up capital			Reserves	Total net worth
	Original	Bonus issues	Total		
1	2	3	4	5	6
(i) Public Limited					
1. Khalilabad	20·00	..	20·00	3·43	23·43
2. Kathkuiyan * 3. Gauri Bazar 4. Padrauna	25·00	15·00	40·00	59·85	99·85
5. Walterganj 6. Basti	15·00	..	15·00	43·25	58·25
7. Burhwal	5·03	9·97	15·00	6·85	21·85
8. Pipraich	10·00	—	10·00	..	10·00
9. Purtabpore	15·00	—	15·00	23·68	38·68
10. Tulsipur	14·00	—	14·00	12·75	26·75
11. Balrampur	14·00	..	14·00	11·01	25·01
12. Baitalpur	7·95	7·95	15·90	17·53	33·43
13. Seorahi	8·00	8·00	16·00	10·23	26·23
14. Deoria	5·99	3·59	9·58	2·69	12·27
15. Captainganj	13·00	..	13·00	4·50	17·50
16. Shahganj	6·27	5·87	12·14	4·04	16·18
17. Ghughli	12·00	..	12·00	8·34	20·34
18. Anandnagar	12·00	8·00	20·00	11·24	31·24
19. Nawabganj	17·00	..	17·00	32·93	49·93
20. Ramkola(P)	10·00	7·50	17·50	19·72	37·22
	210·24	65·88	276·12	272·04	548·16
(ii) Private Limited					
1. Siswabazar	11·00	..	11·00	2·50	13·50
2. Munderwa	5·16	..	5·16	0·71	5·87
3. Lakshmiganj	11·50	..	11·50	2·73	14·23
4. Khadda	8·50	..	8·50	..	8·50
5. Ramkola (M.K.) . .	12·51	..	12·51	..	12·51
6. Barabanki	37·28	..	37·28	0·26	37·54
7. Chhitauni	8·41	4·21	12·62	1·69	14·31
8. Babhnan	20·00	20·00	40·00	7·99	47·99
9. Jarwal Road . . .	37·44	..	37·44	0·01	37·45

सत्यमेव जयते

1	2	3	4	5	6
10. Biswan	14·06	..	14·06	1·45	15·51
11. Sardarnagar . . .	16·96	..	16·96	15·23	32·19
	182·82	24·21	207·03	32·57	239·60
(*iii*) *Partnerships*					
1. Bhatni 2. Motinagar	88·00	..	88·00	4·58	92·58
TOTAL .	481·06	90·09	571·15	309·19	880·34

*Includes Marhowrah factory of Bihar also.

It will be seen that out of the share capital of Rs. 5.71 crores, a sum of Rs. 0.90 crore has been subscribed as bonus shares, the remaining amount of Rs. 4.81 crores being the originally paid up capital. At the close of 1961-62, a sum of Rs. 3.09 crores was also available in reserves, bringing the value of total net worth to Rs. 8.80 crores. Thus the profits so far retained by the East U.P. industry in the form of bonus shares and reserves aggregated Rs. 3.99 crores which means an addition of 83 per cent to the initially paid up capital.

Financial analysis* has been made by this Committee for the years 1953-54, 1957-58 and 1961-62, on the basis of Balance Sheets received from sugar factories and the results are shown below :—

(Amount in lacs of Rupees)

Particulars	1953-54	1957-58	1961-62	Comparative development: 1957-58 over 1953-54	Comparative development: 1961-62 over 1957-58
1. No. of units** . . .	32	33	33	+1	..
2. Gross block . . .	951·35	1,167·10	1,536·87	215·75	369·77
3. Accumulated depreciation .	627·13	736·32	877·73	+109·19	+141·41
4. Net block . . .	324·22	430·78	659·14	+106·56	+228·36
5. Net worth . . .	664·47	746·75	880·34	+82·28	+133·59
6. Surplus of net worth over net block . . .	340·25	315·97	221·20	—24·28	—94·77
7. Debentures and long-term loans†	79·07	71·90	118·78	—7·17	+46·88
8. Available resources . .	419·32	387·87	339·98	—31·45	—47·89
9. Investment . . .	140·18	201·33	220·68	+61·15	+19·35
10. Investment as % of surplus net worth . . .	41·2	63·7	99·8		
11. Net block as R of gross block	34·1	36·9	42·9		

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*Similar to the analysis made by the Tariff Commission in paragraph 15·5 of their report on the cost structure of sugar (1959) for the year 1953-54 and 1957-58.

**Includes Marhowrah factory of Bihar. Hence actual number of units under each year will be one more than shown here.

†This does not include figures for Padrauna, Kathkuiyan and Gauri Bazar factories for all the years and for a Sardarnagar factory for 1961-62, as this information is not available in Balance Sheets.

‡Increase due to Bhatni factory which started from 1957-58.

It will be seen that at the close of 1961-62, out of Rs. 8.80 crores of net worth, a sum of Rs. 6.59 crores stood blocked up in plant, machinery and buildings, leaving a surplus of Rs. 2.21 crores at the industry's disposal. A sum of Rs. 1.19 crores was obtained by the industry by way of debentures and longterm loans, thus augmenting its total available resources to Rs. 3.40 crores. The industry also invested a sum of Rs. 2.21 crores in the form of shares or debentures of associate and other companies and in Government securities leaving a sum of Rs. 1.19 crores to be used mostly as working capital.

These figures are also indicative of the development that has taken place during the last eight years. It will appear that during the period of four years ending 1961-62, the industry has made a gross investment in fixed assets, of the order of Rs. 3.70 crores as against Rs. 2.16 crores in the preceding four years. The fixed assets stand depreciated only to the extent of about 57 per cent of the value of gross block as against 63 per cent four years before, indicating that plant and machinery has not been reduced to scrap value, as a generally supposed, but it is gathering strength with the increased tempo of replacement, modernisation and expansion. The value of net block has increased by Rs. 2.28 crores during these 4 years and the bulk of this has come from the industry's internal resources. There has been an improvement in the position of net worth and a sum of Rs. 1.34 crores has been added to it by increasing paid up capital and reserves. The industry has also drawn upon additional longterm borrowings to the extent of Rs. 0.47 crore during these four years.

The foregoing analysis would show that on the whole there has been some effort towards the development of the industry during recent years but it has been inadequate and slow.

3.2 Profit and loss position

The profit and loss position as revealed from the Balance Sheets of the East U.P. sugar factories for the last ten years is given in Table VIII-A and it would generally indicate the financial position of the industry.

It will be seen from this table, that except for the years 1953-54, 1954-55, 1958-59 and 1959-60 the East U.P. factories in general incurred loss or made nominal profit. The favourable position in the four years mentioned above can be attributed to certain special features peculiar to these years as given below :—

(a) 1953-54 : Only 25 per cent of the sugar produced was requisitioned and the rest 75 per cent was allowed for free sale which fetched a good price.

(b) 1954-55 : Production in the country continued to be short of demand and the factories were permitted to sell entire sugar in the free market, due to sufficient stocks of imported sugar with the Government.

(c) 1958-59 : The control price of sugar was favourable for East U.P. for which the average duration and recovery were actually higher than the average for northern region.

(d) 1959-60 : The ex-factory price of Rs. 37.85 per md. was favourable and incentive was also given in the shape of 50 per cent rebate in excise duty on excess production over previous two years average.

Table VIII-B is based on a study of profit or loss made by factories in various capacity slabs during the two periods of 5 years each *viz.* 1952-53 to 1956-57 and 1957-58 to 1961-62 and also for the entire period 1952-53 to 1961-62. This position is summarised below :

	1952-53 to 1956-57	1957-58 to 1961-62	1952-53 to 1961-62
(*i*) *Factories incurring losses:*			
Number	8	12	
Average loss per year per factory (in lacs of Rs.)	1·66	1·26	1·43
(*ii*) *Factories making profits*			
Number	23	21	26
Average profit per year per factory (in lacs of Rs.)	1·41	1·97	1·23
(*iii*) *Total*			
Number	31	33	33
Average profit per year per factory (in lacs of Rs.)	+0·65	+0·76	+0·71

It will be seen that in the first five-year period 8 factories incurred loss and the remaining 23 made an average profit of Rs. 1.41 lacs per year per factory. In the second five-year period, 12 factories incurred loss and the remaining 21 factories made an average profit of Rs. 1.97 lacs per year per factory. In the entire 10-year period 7 factories suffered loss and 26 made an average profit of Rs. 1.23 lacs per year per factory. The average profit for the whole region was Rs. 0.71 lacs per year only. It should also be borne in mind that in the second five-year period, two years were years of special incentives.

Table VIII-C shows the dividends paid by East U.P. factories since 1952-53. It will be seen that a large number of units have not been able to declare any dividend.

4. SPECIFIC PROBLEMS OF THE FACTORIES

1. Khalilabad

1. Only two *pucca* roads exist. There is difficulty of transport due to shortage of carts.
2. Difficulty in timely availability of manures.
3. Diversion of cane for *gur* manufacture due to high *gur* prices.
4. More irrigation facilities are required.

5. Part of the area is low lying and is affected by floods every year.
6. Very small holdings in the zone.
7. Poor yield of cane.
8. High total losses.

2. Siswabazar

1. There are only a few *kachha* roads existing in the area which is a *terai* area on Nepal border. Hence *pucca* roads are essentially required.
2. Diversion of cane for *gur* manufacture.
3. Flood is also being experienced for the last few years.
4. Total losses are on the higher side.
5. Extra fuel consumption.
6. High labour load.

3. Kathkuiyan

1. Time lost per cent available on the high side due to old worn out plant.
2. Total losses on the high side.
3. High fuel consumption.
4. High labour load.

4. Munderwa

1. Old worn out plant resulting in higher incidence of cost on repairs.
2. Lack of irrigation facilities.
3. Paucity of communications and bad condition of existing roads, bridges and culverts.
4. Unplanned distribution of fertilisers.
5. Time lost per cent available on high side.
6. High total losses.
7. High fuel consumption.
8. High labour load.

5. Bhatni

1. Additional requirement of irrigation and communication.
2. Labour load is very high.
3. Cane growers have small holdings and are generally poor.
4. Time lost per cent available on high side.
5. Very high total losses.
6. High fuel consumption.

6. Lakshmiganj

1. Extra fuel consumption.
2. Cost of repairs and maintenance very high.
3. High labour load.
4. Completely outmoded plant.
5. Low recovery and high losses.
6. Cane gets affected due to floods.
7. Diversion of cane to other factories *e.g.*, Captainganj.
8. Bad condition of roads.

7. Gauri Bazar

1. A very small plant with old outdated machinery.
2. Due to yearly floods the growth of cane in the area is limited.
3. Most of the roads are *kachha*.
4. High total losses.
5. Lack of irrigation facilities.

8. Walterganj

1. High total losses.
2. Very high fuel consumption.
3. High labour load.
4. Lack of proper irrigation facilities.
5. Lack of feeder roads.

9. Khadda

1. Shortage of *pucca* roads in the zone.
2. Time lost per cent available on the high side.
3. High total losses.
4. High fuel consumption.
5. High labour load.

सत्यमेव जयते

10. Ramkola (M. K.)

1. High total losses.
2. There are mostly *kachha* roads without culverts in the interior of the zone due to which easy transport of cane is not possible.
3. Growers being financially weak, have to depend on hired transport of cane.
4. Time lost per cent available on high side.
5. High fuel consumption.
6. High labour load.

11. Barabanki

1. Diversion of cane for *gur* manufacture.
2. Canal water is usually not supplied at proper intervals.
3. Some roads require repair and some additional roads are required to be constructed.
4. Competition of cane with opium which is also a cash crop.
5. High time loss.

    6. High total losses.
    7. High fuel consumption.
    8. High labour load.

12. **Chittaumi**
    1. Low recovery.
    2. Flooded area. Chances of factory being washed away.
    3. Low crushing.
    4. Lack of transport facilities.
    5. Small holdings.
    6. Financial difficulties of the growers.
    7. Uncontrolled harvesting of cane and its plantation.
    8. Lack of irrigation facilities throughout the zone.
    9. High fuel consumption.
    10. High labour load.

13. **Burhwal**
    1. Low crush.
    2. High total losses.
    3. Extra fuel consumption.
    4. Diversion of Burhwal cane to Jarwal Road.
    5. Ratooning is high, rising from 46 to 66 per cent in the last 2-3 years.
    6. Diversion of cane for *gur* manufacture.
    7. About 50 per cent of the area is flooded.
    8. Inadequate transport facilities.
    9. Lack of communications.
    10. High total losses.
    11. High fuel consumption.
    12. High labour load.

14. **Pipraich**
    1. Poor recovery.
    2. Diseased Co 419 variety.
    3. Absence of early variety—varietal imbalance and presence of rejected varieties.
    4. Old inefficient plant.
    5. Extra fuel consumption.
    6. Area very weak in respect of feeder roads, bridges and culverts.
    7. Inadequate control of pests and diseases.
    8. High time loss.
    9. High total losses.

15. **Babhnan**
    1. Shortage of approach roads.
    2. Tubewell channels are not in good condition.
    3. Shortage of communications.
    4. Unsafe bridge at Gharighat.

सत्यमेव जयते

5. Time lost per cent available high.
6. High fuel consumption.

16. **Purtabpore**
    1. About 66 per cent of the cane crushed is of Bihar area.
    2. Additional irrigation facilities are required.
    3. Existence on U.P. cane only not possible.

17. **Tulsipur**
    1. Require additional roads to develop gate cane.
    2. Poor yield of cane.
    3. About 100 tubewells are required for irrigation purposes.
    4. Unsatisfactory arrangement by the Co-operative Cane Development Union in disposal of cane.
    5. High total losses.
    6. High fuel consumption.
    7. High labour load.
    8. High incidence of labour wage due to small capacity of the factory.
    9. The natural calamities like floods and drought occur due to which yield is low.
    10. Too many public deductions from cane price.
    11. Varietal imbalance.
    12. Time lost per cent available high.

18. **Baitalpur**
    1. Roads are not in good condition.
    2. High total losses.
    3. Low sugar recovery.
    4. Due to cane shortage, cane has to be drawn from far flung areas ranging 24 to 34 miles.
    5. Drainage problem in 50 to 60 per cent of the area.
    6. High irrigation charges.

19. **Seorahi**
    1. Additional irrigation facilities are required.
    2. Lack of *pucca* roads in the area and their feeder roads.
    3. Lack of co-operation and co-ordination of the Cane Union regarding proper distribution of requisition slips in time according to factory indents.
    4. Diversion of cane to other factories.
    5. Time lost per cent available high on account of old worn out plant.
    6. High total losses.
    7. High fuel consumption.
    8. High labour load.

20. **Deoria**
    1. Local taxes have to be paid to the Municipal Board for bringing cane carts into the limits of city.
    2. Low yield of cane per acre.

3. High cost of irrigation water.
4. Surface wells need further deep boring.
5. Shortage of feeder roads.
6. Water logging in the area.
7. Flood problem is also there.
8. Length of channels not sufficient.
9. Diversion of cane for *gur* and *khandsari* manufacture.
10. Absence of bridges on *nullas* and poor condition of roads.
11. Long distances from which cane is drawn.
12. Limited unloading capacity of trucks at the factory.
13. High labour load.
14. Low recovery.

21. **Captainganj**

1. Entire area low lying.
2. Being *Banger* land no cane can be produced without adequate irrigation.
3. Additional irrigation facilities are required.
4. Insecticides to save the crop from top borer and other pests are required.
5. Top borers have created a havoc in the area.
6. Diversion of cane for *gur* manufacture.
7. This area has become a regular prey of floods during the rainy season.

22. **Shahganj**

1. Tubewell channels require improvement.
2. Lack of irrigation facilities.
3. Due to *Kanker* layer underneath the soil, the cane starts drying with the onset of summer. Hence season limited to maximum middle of April.
4. Irregular running of pilots and irregular cane supply.
5. Better and more roads required to facilitate quick transport of cane.
6. Paucity of bullock carts in the area.

23. **Ghughli**

1. High sugar loss in bagasse.
2. No saving of bagasse.
3. High labour load.
4. Low recovery.
5. Very grave problem of floods.
6. Absence of good *pucca* roads, culverts and *pucca* bridge on Chhoti Gandak.
7. High fuel consumption.

24. **Padrauna**

1. Lack of feeder roads.
2. Paucity of irrigation facilities.

3. Being a very old plant, the bill of repairing and maintenance is high.
4. Extra fuel consumption.
5. High labour load.
6. High total losses.
7. For proper fertiliser distribution godowns should be situated in all circles.

25. **Anandnagar**

1. Diversion of cane for gur manufacture.
2. Area is vast and cane is grown in small patches.
3. Very poor means of communications.
4. Lack of irrigation facilities.
5. Most of the growers have very small holdings.
6. High fuel consumption.

26. **Basti**

1. Diversion of cane for *gur* manufacture.
2. Roads and communications require improvement.
3. Old worn out plant.
4. Very high extra fuel consumption.
5. High labour load.

27. **Biswan**

1. Though canal is there, water is not available, when it is required most at the time of sowing.
2. Bad condition of feeder roads.
3. Large number of cane growers mostly having small holdings.
4. Very high total losses.
5. High fuel consumption.

28. **Motinagar**

1. Difficulty in timely distribution of manures.
2. Acute problem of cane diversion for *gur* and *khandsari* manufacture.
3. Small holdings of growers.
4. Sowing of cane after harvesting *rabi* crop.
5. Insufficient canal irrigation.
6. Bad condition of roads.
7. Non-timely arrival of railway wagons.
8. High fuel consumption.
9. High labour load.

29. **Nawabganj**

1. Additional means of irrigation are required.
2. Additional communications are required.
3. Difficulty in getting material required for cane development projects.
4. Fall in cane acreage due to consolidation.

सत्यमेव जयते

5. Discrepancies in payments of cane price by the Cane Unions.
6. Unsuitable condition of roads for opening of road centres and consequent transport difficulties.
7. High hours lost per cent available.
8. High losses.
9. High fuel consumption.

30. **Ramkola (P)**

1. Very old plant. Most of the items need replacement.
2. Re-zoning in the cane area is required.
3. Bad condition of roads.
4. High hours lost per cent available.
5. High fuel consumption.

31. **Sardarnagar**

1. Diversion of cane for *gur* manufacture.
2. Poor yield of cane.
3. Condition of roads, bridges and culverts needs improvement.
4. Home zone cane is assigned to other neighbouring factories whereas, in the same season, cane from other factory zones is forced on us.
5. Very old plant.
6. High hours lost per cent available.
7. High total losses.
8. High labour load.

सत्यमेव जयते

5. RECOMMENDATIONS

The foregoing study would indicate that the East U.P. region has alluvial and *bhat* soils which are fertile and have moisture retention capacity and some areas are in the *Terai* (submontain) tract which have a high water table. Rainfall and humidity are fairly good and because of these reasons sugarcane grows even without much irrigation. As such sugarcane has been grown in the region for centuries. The sugar industry came to be established here because of ready availability of sugarcane and cheap labour.

After the grant of protection in 1932, the number of factories increased from 11 in 1931-32 to 38 in 1938-39. The expansion of the industry was rapid and haphazard. The region is, however, still economically backward. The sugar industry being agro-based plays a vital role in the economy of the region. Its continuance and development is, therefore, imperative.

Having been established in early thirties most of the factories are now over 30 years old and of outmoded design. Most of them are also of small capacities. Having outlived their economic life, they are now contributing to inefficiency and higher cost of production and their profitability is very low. They not only need a considerable degree of modernisation but also expansion.

As regards sugarcane production, the growers' holdings are small, irrigational and other facilities are lacking, the growers' resources to provide the wherewithal for the cane crop are meagre and as such the cane yields are low and incidence of pests and diseases is increasing. Cane areas are scattered and means of communication are lacking which are affecting cane supplies to sugar factories. Facilities for cane development are not adequate to meet the requirements of the industry. Cane quality is somewhat poor. Technical efficiency of several factories is poor. A large number of factories are consuming extra fuel. Labour strength is fairly high, thus lowering the productivity of a majority of factories.

In the light of the above situation, the recommendations of the Committee for putting the East U.P. industry on an economic footing are as follows :

1. Rehabilitation, modernisation and expansion

The Committee has examined every individual case with respect to its needs of modernisation and expansion and estimated the expenditure involved and the recommendations of the Committee in regard to these are set forth in the following table :

सत्यमेव जयते

Sl. No.	Name of Factory	Existing daily cane crushing capacity in tonnes 1963-64 season	Capacity upto which extension license already granted (tonnes)	Expanded capacity as recommended by the Committee (tonnes/day)
1	2	3	4	5
1.	Khalilabad	559	900	1,000
2.	Siswabazar	559	800	1,200
3.	Kathkuiyan	610	800	1,000
4.	Munderwa	711	...	1,000
5.	Bhatni	738	1,000	1,200
6.	Lakshmiganj	744	1,000	1,200
7.	Gauri Bazar	750	1,250	1,2 5
8.	Walterganj	772	1,500	1,500
9.	Khadda	773	..	1,000

1	2	3	4	5
10.	Ramkola (M.K.)	791	1,000	1,200
11.	Barabanki	806	..	1,200
12.	Chhitauni	813	..	1,200
13.	Burhwal	813	1,000	1,000
14.	Pipraich	813	1,000	1,200
15.	Babhnan	813	1,000	1,200
16.	Purtabpore	904	..	N.A.
17.	Tulsipur	904	1,200	1,300
18.	Balrampur	904	1,200	1,300
19.	Baitalpur	914	1,200	1,300
20.	Seorahi	940	1,500	1,500
21.	Deoria	965	..	1,300
22.	Captainganj	970	1,250	1,250
23.	Shahganj	1,016	..	1,300
24.	Ghughli	1,016	1,200	1,200
25.	Padrauna	1,016	1,250	1,500
26.	Anandnagar	1,016	1,500	1,500
27.	Basti	1,025	1,500	1,500
28.	Jarwal Road	1,118	..	N.A.
29.	Biswan	1,219	1,500	1,500
30.	Motinagar	1,321	1,500	1,800
31.	Nawabganj	1,524	..	1,800
32.	Ramkola (P)	1,524	..	2,000
33.	Sardarnagar	2,286	2,600	3,200
	TOTAL	31,647		44,622*

सत्यमेव जयते

*This includes the existing capacities of Purtabpore and Jarwal Road factories who did not submit any returns.

The Committee has estimated the total cost of rehabilitation, modernisation and expansion for the above 31 factories as Rs. 16.0 crores.

2. Sugarcane production and development

The prime necessity is to stabilize sugarcane production, improve the yield and quality of sugarcane, organise the agencies of sugarcane and sugar production into one unit, reduce cost of transport of cane to the factories, regulate sugarcane supplies and arrange fresher supplies of cane to the factories in the minimum time. These objectives can be achieved in the following manner :

(i) *Cane Area to be Compacted and Earmarked for Sugar Factories*

(a) Each factory should have a definite number of growers and a compact area permanently committed to supply sugarcane according to the requirements of the factory. It would be desirable to increase and develop cane acreage around the factory, as close to it, as possible and reduce the acreage in outer areas according to the requirements of the factories. This will reduce the tonne-mile expense of bringing sugarcane to the factory and will also improve the sugar recovery due to supply of fresh cane.

(b) There should be clear cut, well defined, areas of cane production, permanently attached to sugar factories and there should be no changes in them as far as possible. The present practice of annual reservation of areas which leads to uncertainty should be given up.

(ii) *Intensive Development Required* :

(a) The area for intensive development should be doubled to start with *i.e.*, it should cover 8,000 acres as against 4,000 acres taken up at present. In fact the intensive development in blocks of 4,000 acres should be a continuous process till the entire area is covered.

(b) In addition to operating the Intensive Development Schemes there should also be a package programme in well irrigated areas where the yields of cane could be raised at least to forty tonnes per acre.

(c) Blocks of 200 to 500 acres should be selected in each factory zone. All these blocks should be saturated in respect of all requirements of cane development. These blocks will thus serve as demonstration areas.

(iii) *Facilities to Growers* :

(a) Credit facilities to the growers should be augmented.

(b) The grwers should be provided with necessary implements for better soil preparation. Light tractors should be made available by concessional purchases. This could be done by an independent agency which can be encouraged to maintain implements etc. and workshop facilities on subsidised basis.

(c) Individual growers or their associations should be given loan facilities for the purchase of tractors wherever required.

(d) Subsidy on the purchase of tractors should also be made available in the intensive development blocks.

(iv) *Irrigation Facilities* :

(a) The State Government should provide the necessary finance, loans and subsidies for the implementation of irrigation schemes and should accord the highest priority to this work so that it is completed by the end of the Fourth Plan period or even earlier, if possible. If the State resources are inadequate for speedy execution of these development projects, the Central Government should advance suitable financial assistance to the State Government.

(b) Rates for irrigation should be made uniform over the entire State irrespective of mode of power used.

(c) Subsidise irrigation to growers in East U.P. as they are not irrigation minded at present and have limited resources.

(d) Have a slab system of irrigation charges by reducing the charges for each subsequent irrigation.

(e) If possible, provide guaranteed irrigation at the required times for the cane crop for which the Cane Development Department of the State Government is prepared to deposit advance charges with the Tubewell Department.

(f) Sites of new tubewells should be fixed in consultation with the local officers of the Cane Department and the factories concerned.

(g) Length of *pucca* channels should be increased and their proper maintenance effected.

(h) The command area of the tubewells should be reduced from thousand to five hundred acres.

(i) General permission should be given for the construction of private tubewells beyond 300 acres of a State tubewell.

(j) Location of some tubewells in each area should be planned in such a way as to saturate a definite block of say 500 to 1,000 acres in each zone to serve as a demonstration block.

(k) Regular power supply for working of the tubewells should be assured.

(l) Power potential for installation of new State and private tubewells should be developed and licenses for the use of electric power for private tubewells should be given liberally.

(m) The limit of loan for minor irrigation schemes should be increased by the Cane Unions from Rs. 400 to Rs. 600 per acre of cane which should be recoverable in five instalments instead of three. These loans should be available to the new growers also who want to start cane cultivation, as, at present, these are given only to the old growers against their cane crop security.

(n) Encouragement should be given to the installation of small pumping sets in East U.P. areas for small cultivators.

(o) Cultivators desirous of setting up minor irrigation projects should not be made to bear the connection charges from the main power lines.

(p) Since the cultivators in East U.P. have not yet realised the advantages of irrigation, suitable demonstrations should be carried out and case studies of such trials, giving full details of the economics should be widely publicised.

(v) *Distribution of Manures and Fertilisers* :

The following steps should be taken for proper distribution and utilisation of manures and fertilisers :

(i) Cow-dung gas production units should be subsidised and popularised to prevent the burning of cow-dung. Experiments made at the National Sugar Institute, Kanpur on the production of bio-gas and bio-manure from cellulosic agricultural wastes have given encouraging results. Such bio-gas and bio-manure plants should be designed to suit the village economy and popularised.

(ii) In view of the difficulties in the distribution of the manures and fertilisers from the zonal or district headquarters to the growers in far off places, staff quarters and godowns should be constructed at the circle headquarters of Kamdars and Supervisors. The distribution of fertilizers may also be done by mobile vans for serving the needs of agriculturists.

(iii) The basis of charging interest should be for the actual period of credit and not from a back date, as at present.

(iv) Subsidy on green manure is inadequate and should be increased to at least Rs. 13.40 per quintal.

(v) Buffer stock of fertilisers and manures should be maintained in big godowns at the zonal and district centres and loans should be advanced to the Co-operative Unions for the purpose, where necessary.

(vi) *Plant Protection* :

The following measures should be taken for plant protection :

(a) The increasing incidence of pests and diseases, particularly of Terai Borer and other borers, Red Rot etc. indicates the need for a very efficient plant protection squad, a type of a well equipped standing army, to be directed for immediate action, wherever pests and diseases raise their head. In the absence of an epidemic the team will keep busy surveying and watching for pests and exterminating them in the early stages. This should be brought about by suitably enlarging and strengthening the present plant protection organization of the Cane Department. In view of the specialised nature of the work demanding exhaustive and immediate attention, it will not be useful to have a common plant protection organization for all agricultural crops. The objective will be achieved only by augmenting and strengthening the existing organisation of the Cane Department.

(b) Biological control of insects and pests should be intensified in preference to chemical insecticides.

(c) Effective measures should be introduced to check the entry of new pests and diseases into these areas.

(vii) *Harvesting on Maturity Basis* :

The cane should be harvested on maturity basis for which the following measures should be taken :

(a) The cultivators should be educated about the advantages gained by the increase in recovery, as a result of pre-harvest survey.

(b) The sugar factory staff of cane and manufacturing departments should be given necessary training in the correct procedure of carrying out the survey and preparing the supply schedule so that the factories can do it regularly with minimum expense.

(c) The growers should also be trained to adopt methods of improving cane quality such as planting proper variety, applying proper type and quantity of manure at the proper time, irrigation control, selection of high and well drained land etc.

(d) A publicity section should be set up as a part of the Cane Department with sufficient staff and equipment.

(viii) *Cane Breeding Work* :

It is necessary to accelerate the breeding programme and the development of suitable varieties in the region.

(a) For the above purpose the Kunraghat (Gorakhpur) Research Station should be strengthened considerably and raised to the status of a full-fledged research station. Sub-research stations should be opened at Deoria and Gonda.

(b) For the purpose of speeding up the releases of suitable varieties to the cultivators each factory should be allowed a farm of 300 to 500 acres for testing out and selecting the varieties on a large scale and for raising seed material of proper variety.

(c) The factories should serve as research-*cum*-development centres working in close co-ordination with Regional Research Centres at Gorakhpur, Deoria and Gonda. With this end in view, the State Government should consider the feasibility of exempting the factory farms from the operation of Land Ceilings Act.

(d) Primary and secondary nurseries should be established, scattered all over the region to meet the requirements of seed of improved and suitable varieties and free from disease.

(e) The Indian Sugar Mills' Association should also set up a Sugarcane Research Station of their own by raising contribution from the member factories. The Central and State Governments should contribute liberally towards such a venture.

3. Communications

Speedy transport of the harvested cane to the factory is essential for economic working of sugar factories. Development of communications is, therefore, called for urgently. The following steps may be taken :

(a) The capacity of the State P.W.D for constructing roads is very limited. Sugar factories should, therefore, be entrusted with the task of building the roads according to the plans and after the roads have been constructed, their maintenance should be taken over by the P.W.D. Alternatively the State Government should suitably strengthen the P.W.D. and remove procedural bottlenecks. The Government may also in this connection consider suitable increase in the pay scales of technical staff so that personnel in required number may be available.

(b) The road construction programme should be undertaken by the Government very urgently. As the factories in East U.P. are not able to contribute, due to their weak financial position, the progress in this area is very slow. The contribution of the factories and the growers in East U.P. should, therefore, be reduced from the present 1/6 to 1/12 and the balance should be shared by the Central and the State Governments in the case of East U.P. region.

(c) The State Government should consider raising the cane purchase tax from Re. 0.50 to Re. 0.60 per quintal and earmark the extra realisation for the road development programme all over the State. On an average a minimum of 32 kilometres of road should be built per year in each factory zone during the next five years.

4. Utilisation of by-products

(a) Bagasse should be saved by the modernisation of the factories and the saved bagasse should be utilised for the production of news-print, straw board etc. In East U.P. alone, two pulp plants of 75 tonnes per day capacity and one of 50 tonnes per day capacity can be installed. It is recommended that of the two 75 tonnes pulp plants one should be established near Gorakhpur on the Rapti river and the other near Chhitauni on Gandak river and one of 50 tonnes capacity may be located near Burhwal on Ghaghra river.

There is also the possibility of augmenting bagasse supplies to bagasse based industries by substituting it with coal or furnace oil from Barauni.

(b) The East U.P. region having the maximum number of sulphitation factories has a good potential source for the production of 3,800 tonnes of sugarcane wax. With the expansion in capacity as suggested this production can be estimated at about 4,000-5,000 tonnes per annum. To start with, a half-tonne wax per day plant should be established in a sugar factory and worked in collaboration with the National Sugar Institute, Kanpur.

(c) Fuller utilisation of molasses should be made for the production of alcohol and steps to ensure the same should be taken.

5. Surplus labour

As reported, there would be about 1,000 skilled and 3,000 unskilled labour rendered surplus after modernisation. While the existing labour strength would be reduced to some extent through the processes of natural wastage, superannuation etc., the rest of the surplus labour should be utilised in the by-product industries which can be developed simultaneously, as indicated above.

In connection with the problem of the surplus labour the following recommendations of the Central Wage Board for Sugar Industry may be taken note of :

> "The Government should undertake workload study in the sugar industry at an early date."

6. General

(i) The following administrative measures may be taken by the Government of Uttar Pradesh :—

(a) For cane development work to be carried out speedily and effectively greater co-ordination is called for between the different departments of the State Government such as the Cane Department, the Irrigation Department, the P.W.D. and the Agriculture Department.

(b) The Cane Department which is directly concerned with the task of cane development should be strengthened considerably.

(c) In order to bring about co-ordination among various departments and implement various recommendations expeditiously, a High Power Board should be constituted at the State level, consisting of the Secretaries of the departments of Cane Industries, Agriculture, Community Development, Co-operation, Irrigation, and P.W.D. with the Chief Minister as Chairman, Minister for Cane Development as Vice-Chairman and the Cane Commissioner as the Member-Secretary and this organisation should be made responsible to achieve the expected results.

(d) Growers of gate area should be given loans or subsidy to bond all their cane production for supply to the factory (leaving seed requirements only).

(e) A penalty for short supply should be levied as provided in the new bonding policy of the State Government.

(f) The State Government may consider linking the sugarcane purchase tax with the duration of the season.

(g) Yearwise targets of production should be announced at least one year in advance.

(h) A systematic survey should be carried out regarding the drainage problem.

(i) East U.P. should be given weightage in minor irrigation projects and afforded facilities regarding construction materials for expeditious utilisation of loans.

(j) East U.P. should be given weightage in the construction of roads around the sugar factories.

(k) The U.P. Government should enter into a long-term agreement with the Bihar Government to solve the sugarcane supply problems of the factories situated in border areas.

(l) A separate quota of constructional material namely, cement, coal, boring pipe etc. should be placed at the disposal of the Cane Commissioner for intensive development.

(m) Suitable regulation should be effected in the supply of cane to *gur* and *khandsari* manufacturers.

(n) Reservation of areas should be made on a long-term basis and should not be disturbed irrespective of the length of the season of the various factories.

(o) A full-fledged training institute to impart training to cane development staff should be set up at Lucknow or some other suitable place.

(p) Residential quarters should be constructed alongside the manure godowns for the Cane Supervisors.

(q) In view of the size of the Cane Department and the magnitude, importance and urgency of connected administrative problems, the department should have a regional set-up. The entire State should be divided into four or five regions and there should be Regional Officers in senior scale to dispose of the work of the region in respect of development, marketing, establishment and other matters and for supervising the work of District Cane Officers and lower field staff.

(r) In order to bring about better co-ordination between the Cane Unions and the factories, the representation of the factory on the Board of Directors of the Unions should be increased.

(s) Appointment of a Conciliation Committee consisting of representatives of the factory and the Cane Unions should be made to decide the disputes locally.

(t) The procedure for cane crop survey should be modified and the revised survey and supply schedule should be applied before the start of the season.

(u) The staff provided for the cane development work is inadequate. The cane crop survey figures collected at present are not dependable. The Kamdars should be appointed for a fixed acreage and not for the entire cane area since the cane acreage is scattered and the distance becomes too large to manage.

(v) There should be an element of incentive in the shape of prizes and reward for good work in the development planning which is lacking at present. Similarly, suitable punishment should be awarded to those who are found inefficient and slack.

(w) Ratoon area in East U.P. should be reduced.

(x) A system of immediate payment of cane price should be introduced straightway in all the factories and the practice of withholding the growers' money by the factories for effecting expansion or financing other industries and business should be stopped.

(ii) The Committee feels that a few changes are necessary in certain governmental measures at present governing the industry. The changes proposed are as follows :—

(a) Since 1957-58 when the cost structure of sugar was last examined by the Tariff Commission, the conditions in the industry have changed materially and call for a fresh examination. The Committee notes with satisfaction the appointment of the Sen Commission for this and other matters.

(b) The East U.P. region should be separated from the northern region and its cost of production should be worked out separately on the basis of its own averages of capacity, duration and recovery, etc.

(c) Contributions made by the factories towards the construction of roads under approved contributory road construction schemes and for intensive cane development schemes and such other schemes as are sponsored by the Government should be treated as allowable expenditure for purposes of income-tax.

(iii) It has been suggested that the Excise Duty and Purchase Tax be linked to production or capacity. There is some justification in this suggestion and the Government may examine implications, but the Committee is not in favour of giving long-term props. The suggestions could be considered for a short period during which the uneconomic factories must rehabilitate themselves.

(iv) The floor price of cane should be announced before the planting season.

(v) As an interim relief, the Government may take up with the banks the question of the reduction of the bank margin from the present level of 20 or 25 per cent to 10 per cent.

(vi) *Export Loss.*—The East U.P. factories have represented that the subsidies given by the Government in respect of export loss should be distributed according to the cost of production of the industry in the region and not on pro-rata basis. This may be considered by the Government.

(vii) *Wage Board Award.*—If adequate provision for the increase due to Wage Board Award has not been made in the sugar price fixed, this may be done in future.

(viii) *Linking of cane price with recovery.*—The recovery in East U.P. is generally higher than in West U.P. As such when a uniform price is fixed for U.P. or there is free economy, East U.P. enjoys some advantage but with linking the price with recovery this advantage has disappeared. The situation can be remedied by providing a separate cost schedule for East U.P.

7. *Finance required*

Financial requirements in East U.P. are estimated as follows :—

	Crores of rupees	
(*i*) Development of irrigation	15·17	(including loan and subsidy).
(*ii*) Manures and fertilizers (additional) . .	0·90	(loan)
(*iii*) Cane seed	0·36	(subsidy for five years.)
(*iv*) Communications	20·00	
(*v*) Rehabilitation, modernisation and expansion .	16·00	(for 31 factories)
TOTAL .	52·43	

सत्यमेव जयते

TABLE I-A

Area under Cane

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Area under cane(000 acres)			
			1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Khalilabad	559	13·61	14·19	14·52	8·51
2.	Siswabazar	559	15·35	15·10	18·74	16·33
3.	Kathkuiyan	610	11·56	12·30	12·85	9·80
4.	Munderwa	711	11·39	12·85	12·13	8·34
5.	Bhatni	738	15·72	16·86	20·17	11·71
6.	Lakshmiganj	744	10·59	10·84	11·69	9·27
7.	Gauri Bazar	750	8·50	11·50	9·70	7·67
8.	Walterganj	772	16·90	18·45	17·97	12·45
9.	Khadda	773	11·00	11·40	13·98	12·67
10.	Ramkola (MK)	791	13·38	14·80	13·65	10·64
11.	Barabanki	806	13·61	19·31	19·59	14·48
12.	Chhitauni	813	11·02	11·49	12·80	9·07
13.	Burhwal	813	12·00	16·73	19·62	17·19
14.	Pipraich	813	12·86	12·66	13·57	10·19
15.	Bubhnan	813	13·63	14·81	14·01	11·05
16.	Purtabpore	904	7·80	9·38	7·87	6·39
17.	Tulsipur	904	15·74	23·23	25·81	18·99
18.	Balrampur	904	16·64	18·59	22·64	15·61
19.	Baitalpur	914	10·74	14·02	14·20	10·71
20.	Seorahi	940	19·31	17·52	19·24	14·95
21.	Deoria	965	17·55	19·24	18·84	13·69
22.	Captainganj	970	14·81	17·85	16·72	18·92
23.	Shahganj	1,016	19·91	26·06	27·24	25·71
24.	Ghughli	1,016	12·84	14·70	15·56	12·06
25.	Padrauna	1,016	14·72	13·37	15·46	13·78
26.	Anandnagar	1,016	16·25	19·15	20·51	13·00
27.	Basti	1,025	20·93	23·35	19·43	15·21
28.	Jarwal Road	1,118	22·23	29·68	31·55	29·67
29.	Biswan	1,219	20·41	29·47	30·00	28·35
30.	Motinagar	1,321	30·93	41·35	41·55	37·41
31.	Nawabganj	1,524	23·37	27·27	27·67	28·30
32.	Ramkola(P)	1,524	17·92	18·91	19·75	15·83
33.	Sardarnagar	2,286	25·07	33·86	32·07	24·09
	TOTAL	31,647	518·29	610·99	631·10	498·09

Source : Office of the Cane Commissioner, Uttar Pradesh, Lucknow

सत्यमेव जयते

TABLE I-B

Estimated Yield of Cane Per Acre

Sl. No.	District	Name of Factory	Estimated yield per acre (tonnes) 1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Barabanki .	Barabanki Burhwal	15.79	14·74	12·95	12·35
2.	Basti . .	Khalilabad Munderwa Walterganj Basti	17·47	17·84	15·71	14·30
3.	Deoria . .	Kathkuiyan Bhatni Lakshmiganj Gauri Bazar Khadda Ramkola (M.K.) Chhitauni Purtabpore Baitalpur Seorahi Deoria Captainganj Padrauna Ramkola (P)	16·09	16·57	14·15	13·96
4. 5.	Baharaich . Gonda . .	Jarwal Road Babhnan Tulsipur Balrampur Nawabganj	13·40	13·32	11·94	11·05
6.	Gorakhpur .	Siswabazar Pipraich Ghughli Anandnagar Sardarnnagar	17·92	19·56	16·39	12·69
7. 8.	Faizabad . Jaunpur . .	Motinagar Shahganj	16·16	17·65	17·65	14·71
9.	Sitapur . .	Biswan	13·96	13·21	13·74	13·55
		AVERAGE .	16·10	16·74	14·73	13·17

Source : Office of the Cane Commissioner, U.P., Lucknow.

सत्यमेव जयते

TABLE I-C

Percentage Utilization of Cane Crop for White Sugar

Sl. No.	District	Name of Factory	White sugar			
			1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Barabanki .	Barabanki Burhwal	42·9	41·2	34·5	36·5
2.	Basti . .	Khalilabad Munderwa Walterganj Basti	38·7	39·8	36·5	39·6
3.	Deoria . .	Kathkuiyan Bhatni Lakshmiganj Gauri Bazar Khadda Ramkola (M.K.) Chhitauni Purtabpore Baitalpur Seorahi Deoria Captainganj Padrauna Ramkola (P)	63·0	58·5	60·5	44·3
4. 5.	Bahraich . . Gonda . .	Jarwal Road Babhnan Tulsipur Balrampur Nawabganj	46·5	43·3	39·8	34·7
6.	Gorakhpur .	Siswabazar Pipraich Ghughli Anandnagar Sardarnagar	56·9	52·9	50·9	44·9
7.	Faizabad . .	Motinagar	31·5	27·3	20·1	19·5
8.	Sitapur . .	Biswan	35·3	41·1	31·1	29·4
		AVERAGE .	50·9	47·6	44·7	37·5

Source.—Office of the Cane Commissioner, Uttar Pradesh, Lucknow.

सत्यमेव जयते

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Actual supplies made to the factories (000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Khalilabad	559	78·47	101·87	64·51	40·24
2.	Siswabazar	559	130·45	131·97	130·22	76·92
3.	Kathkuiyan	610	112·25	114·30	99·02	50·83
4.	Munderwa	711	103·54	108·92	75·13	53·03
5.	Bhatni	738	102·44	117·84	94·64	38·23
6.	Lakshmiganj	744	110·93	126·14	117·03	66·13
7.	Gauri Bazar	750	102·44	127·91	93·41	55·83
8.	Walterganj	772	119·36	136·65	106·51	68·11
9.	Khadda	773	111·03	109·20	95·53	58·88
10.	Ramkola (M.K.) . .	791	131·14	133·17	125·52	69·58
11.	Barabanki	806	95·75	126·36	98·76	73·42
12.	Chhitauni	813	135·02	133·08	134·00	62·67
13.	Burhwal	813	77·92	95·36	78·85	71·49
14.	Pipraich	813	119·60	150·76	123·04	58·99
15.	Babhnan	813	94·39	114·88	89·76	67·38
16.	Purtabpore	904	138·72	153·31	105·86	71·13
17.	Tulsipur	904	125·37	167·25	139·18	80·08
18.	Balrampur	904	96·94	122·64	110·86	54·78
19.	Baitalpur	914	128·82	159·09	130·72	75·98
20.	Seorahi	940	181·93	175·75	164·07	82·39
21.	Deoria	965	118·36	147·73	119·18	69·98
22.	Captainganj	970	154·43	159·01	146·86	76·44
23.	Shahganj	1,016	111·88	134·84	96·30	71·09
24.	Ghughli	1,016	142·20	148·89	134·23	66·29
25.	Padrauna	1,016	150·19	150·88	157·86	80·15
26.	Anandnagar	1,016	141·05	164·88	142·63	64·12
27.	Basti	1,025	121·62	130·89	111·76	73·72
28.	Jarwal Road	1,118	125·96	135·01	126·85	85·00
29.	Biswan	1,219	100·50	159·86	128·23	112·84
30.	Motinagar	1,321	147·01	189·24	147·45	124·94
31.	Nawabganj	1,524	138·16	147·21	134·91	66·89
32.	Ramkola (P)	1,524	195·37	200·26	229·27	127·00
33.	Sardarnagar	2,286	309·07	392·85	307·56	164·42
	TOTAL .		4,252·21	4,868·00	4,159·71	2,459·07

Source.—Office of the Cane Commissioner, Uttar Pradesh, Lucknow.

TABLE I-E

Percentage of Gate, Road and Rail Cane and Number of Growers

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Per cent cate cane	Per cent road cane	Per cent rail cane	No. of growers supplying cane to the factory (1962-63 season)
1	2	3	4	5	6	7
1.	Khalilabad . . .	559	92	7	1	30,505
2.	Siswabazar . . .	559	70	30	...	22,305
3.	Kathkuiyan . . .	610	100	..	...	15,723
4.	Munderwa . . .	711	98	2	...	23,405
5.	Bhatni	738	60	6	34	52,000
6.	Lakshmiganj . . .	744	85	15	...	8,372
7.	Gauri Bazar . . .	750	76	24	...	16,971
8.	Walterganj . . .	772	72	17	11	32,000
9.	Khadda	773	96	4	..	9,673
10.	Ramkola (M.K.) . .	791	99	1	..	12,111
11.	Barabanki . . .	806	67	33	...	26,296
12.	Chhitauni . . .	813	100	..	...	6,950
13.	Burhwal	813	76	7	17	14,901
14.	Pipraich	813	90	10	..	23,159
15.	Babhnan	813	100	..	..	34,000
16.	Purtabpore . . .	904	100 (including about 50% by their own tramway)	..	..	10,713
17.	Tulsipur	904	50	7	43	22,100
18.	Balrampur . . .	904	39	39	22	26,673
19.	Baitalpur . . .	914	64	36	...	18,000
20.	Seorahi	940	97	...	3	24,783
21.	Deoria	965	65	35	..	35,195
22.	Captainganj . . .	970	59	15	26	30,000
23.	Shahganj . . .	1,016	60	18	22	66,000
24.	Ghughli	1,016	97	3	...	22,811
25.	Padrauna	1,016	100	..	...	15,484
26.	Anandnagar . . .	1,016	60	9	31	44,574
27.	Basti	1,025	88	12	..	44,047
28.	Jarwal Road . . .	1,118	66	8	26	21,395
29.	Biswan	1,219	66	7	27	45,638
30.	Motinagar . . .	1,321	35	27	38	70,000
31.	Nawabganj . . .	1,524	55	26	19	34,369
32.	Ramkola (P) . . .	1,524	90	10	...	16,741
33.	Sardarnagar . . .	2,286	47 (including about 30% by their own tramway)	53	...	43,721
					TOTAL ..	920,615

Source.—Office of the Cane Commissioner, U.P., Lucknow.

TABLE II-A

Area Irrigated and Requirements in Respect of Irrigation

Sl. No.	Name of Factory	Area irrigated per cent culturable	Requirements for irrigating balance area		
			State tube-wells	Private tube-wells	Masonry wells
1	2	3	4	5	6
1.	Khalilabad	42·9	50	50	350
2.	Siswabazar	37·0	50	50	300
3.	Kathkuiyan	35·3	34	34	250
4.	Munderwa	60·6	30	30	200
5.	Bhatni	58·8	60	60	400
6.	Lakshmiganj	35·7	8	—	—
7.	Gauri Bazar	77·8	12	12	80
8.	Walterganj	72·7	40	40	300
9.	Khadda	34·7	20	20	100
10.	Ramkola (M. K.) . .	36·6	16	16	100
11.	Barabanki	49·4	30	30	200
12.	Chhitauni	31·2	10	10	100
13.	Burhwal	29·5	50	50	300
14.	Pipraich	57·1	30	30	200
15.	Babhnan	53·2	34	34	250
16.	Purtabpore . . .	38·4	30	30	200
17.	Tulsipur	11·4	100	100	—
18.	Balrampur	31·1	200	300	500
19.	Baitalpur	67·6	15	15	100
20.	Seorahi	32·8	60	60	400
21.	Deoria	58·8	55	55	400
22.	Captainganj . . .	62·3	10	10	50
23.	Shahganj	75·0	15	15	100
24.	Ghughli	61·0	22	22	150
25.	Padrauna	39·2	10	10	100
26.	Anandnagar . . .	28·9	100	100	700
27.	Basti	67·1	38	38	250
28.	Jarwal Road . . .	10·0	50	50	350
29.	Biswan	63·5	20	—	—
30.	Motinagar . . .	53·2	100	100	500
31.	Nawabganj . . .	24·1	100	100	700
32.	Ramkola (P) . . .	38·3	8	8	50
33.	Sardarnagar . . .	52·9	90	90	300
	TOTAL .	42·4	1,497	1,559	7,980

NOTE.—(1) The requirements have been worked out on the basis of figures available from the Irrigation Deptt. and the Agricultural Department of U.P. and from those available from the factories and District Cane Officers.

(2) The number of State tubewells give above will cover 80 per cent, Private tube wells will cover 10 per cent and masonry wells will cover the remaining 10 per cent of the area for full saturation.

Source.—Office of the Cane Commissioner, Uttar Pradesh, Lucknow.

सत्यमेव जयते

TABLE II-B

Manures and Fertilisers

	Chemical fertilisers ()onnes)	Cake and sterameal (tonnes)	Green manure (tonnes)
(*i*) Total requirement .	60,600	45,450	2,266
(*ii*) Provisions being made by cane organisations	30,300	22,725	986
(*iii*) Balance requirement (shown below factory-wise)	30,300	22,725	1,280

Sl. No.	Name of Factory	Approximate area under cane (000 acres)	Balance requirement of manures & fertilisers (tonnes)		
			Chemical fertilisers	Cakes & sterameal	Green manures seed
1	2	3	4	5	6
1.	Khalilabad	14	700	525·0	22
2.	Siswabazar	19	950	712·5	41
3.	Kathkuiyan	13	650	427·5	19
4.	Munderwa	13	650	487·5	19
5.	Bhatni	24	1,200	900·0	60
6.	Lakshmiganj . . .	11	550	412·5	11
7.	Gauri Bazar . . .	10	500	375·0	8
8.	Walterganj . . .	17	650	637·5	34
9.	Khadda . . .	15	750	562·5	26
10.	Ramkola (MK) . . .	14	700	525·0	22
11.	Barabanki	91	1,050	787·5	48
12.	Chhitauni	12	600	450·0	15
13.	Burhwal	20	1,000	750·0	45
14.	Pipraich	13	650	487·5	19
15.	Babhnan	14	700	525·0	22
16.	Purtabpore	7	350	262·5	—
17.	Tulsipur	24	1,200	900·0	60
18.	Balrampur	20	1,000	750·0	45
19.	Baitalpur	18	600	450.0	15
20.	Seorahi	21	1,050	787·5	48
21.	Deoria	18	900	675·0	37
22.	Captainganj	15	750	562·5	26
23.	Shahganj	15	750	562·5	26
24.	Ghughli	16	800	600·0	30
25.	Padrauna	17	850	637·5	34
26.	Anandnagar . . .	21	1,050	787·5	48
27.	Basti	16	800	600·0	30
28.	Jarwal Road	26	1,300	975·0	66
29.	Biswan	30	1,500	1,125·0	83
30.	Motinagar	40	2,000	1,500·0	120
31.	Nawabganj	28	1,400	1,050·0	74
32.	Ramkola (P)	19	950	712·5	41
33.	Sardarnagar	31	1,550	1,162·5	86
	TOTAL .	606	30,300	22,725·0	1,280

Source.—Office of the Cane Commissioner, U.P., Lucknow.

TABLE II-C

Cane Seed Requirements

Sl. No.	Name of Factory	Approximate area under cane (000 acres)	Amount of seed requirement yearly (tonnes)	Amount of seed proposed to be distributed by C.D.S. yearly (tonnes)	Balance requirement to be met by growers (tonnes)
1	2	3	4	5	6
1.	Khalilabad . . .	14·0	19,600	3,920	15,680
2.	Siswabazar . . .	19·0	26,600	5,320	21,280
3.	Kathkuiyan . . .	13·0	18,200	3,640	14,560
4.	Munderwa	13·0	18,200	3,640	14,560
5.	Bhatni	24·0	33,600	6,720	26,880
6.	Lakshmiganj . . .	11·0	15,400	3,080	12,320
7.	Gauri Bazar . . .	10·0	14,000	2,800	11,200
8.	Walterganj . . .	17·0	23,800	4,760	19,040
9.	Khadda	15·0	21,000	4,200	16,800
10.	Ramkola (MK) . .	14·0	19,600	3,940	15,660
11.	Barabanki	21·0	29,400	5,880	23,520
12.	Chhitauni	12·0	16,800	3,360	13,440
13.	Burhwal	20·0	28,000	5,600	22,400
14.	Pipraich	13·0	18,200	3,640	14,560
15.	Babhnan	14·0	19,600	3,920	15,680
16.	Purtabpore . . .	7·0	9,800	1,960	7,840
17.	Tulsipur	24·0	33,600	6,720	26,880
18.	Balrampur	20·0	28,000	5,600	22,400
19.	Baitalpur	12·0	16,800	3,360	13,440
20.	Seorahi	21·0	29,400	5,880	23,520
21.	Deoria	18·0	25,200	5,040	20,160
22.	Captainganj . . .	15·0	21,000	4,200	16,800
23.	Shahganj	15·0	27,000	5,400	21,600
24.	Ghughli	16·0	22,400	4,480	17,920
25.	Padrauna	17·0	23,800	4,760	19,040
26.	Anandnagar . . .	21·0	29,400	5,880	23,520
27.	Basti	16·0	22,400	4,480	17,920
28.	Jarwal Road . . .	26·0	36,400	7,280	29,120
29.	Biswan	30·0	42,000	8,400	33,600
30.	Motinagar . . .	40·0	56,000	11,200	44,800
31.	Nawabganj . . .	28·0	39,200	7,840	31,360
32.	Ramkola (P) . . .	19·0	26,600	5,320	21,280
33.	Sardarnagar . . .	31·0	43,400	8,680	34,720
		TOTAL	8,54,400	1,70,900	6,83,500

Source.—Office of Cane Commissioner, U.P., Lucknow.

सत्यमेव जयते

TABLE II-D

Means of Communications

Sl. No.	Name of Factory	Existing *Pucca* roads in factory zone (Kms.)	Requirements		
			Pucca roads in Kms.	No. of bridges	No. of culverts
1	2	3	4	5	6
1.	Khalilabad . . .	91	80	3	150
2.	Siswabazar . . .	29	120	5	150
3.	Kathkuiyan . . .	25	90	..	100
4.	Munderwa	20	75	2	140
5.	Bhatni	17	95	5	200
6.	Lakshmiganj . . .	13	65	1	100
7.	Gauri Bazar . . .	95	140	3	100
8.	Walterganj . . .	82	115	2	110
9.	Khadda	25	115	5	100
10.	Ramkola (MK) . .	37	85	4	70
11.	Barabanki	111	50	2	200
12.	Chhitauni	5	160	6	100
13.	Burhwal	25	60	3	160
14.	Pipraich	58	96	2	100
15.	Babhnan	30	134	2	100
16.	Purtabpore . . .	8	70	3	70
17.	Tulsipur	48	122	20	150
18.	Balrampur	153	80	..	150
19.	Baitalpur	75	54	2	120
20.	Seorahi	44	177	3	57
21.	Deoria	139	86	2	180
22.	Captainganj . . .	74	140	3	150
23.	Shahganj	190	112	..	150
24.	Ghughli	73	41	4	100
25.	Padrauna	96	91	4	75
26.	Anandnagar . . .	130	152	4	150
27.	Basti	94	100	3	100
28.	Jarwal Road . . .	80	90	..	200
29.	Biswan	48	32	5	200
30.	Motinagar . . .	254	35	1	140
31.	Nawabganj . . .	51	63	4	75
32.	Ramkola (P) . . .	26	64	2	100
33.	Sardarnagar . . .	128	130	5	200
	TOTAL .	2,370	3,119	110	4,247

Source.—Office of Cane Commissioner, Uttar Pradesh, Lucknow.

सत्यमेव जयते

TABLE III-A

Milling Plant

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Cane knives total H. P. & No. of sets	Milling tandem	Mill drive	
					Type	Total H.P.
1	2	3	4	5	6	7
1.	Khalilabad	559	65(1)	12/24"×48"	E	276
2.	Siswabazar	559	150(2)	14/25"×48"	E	400
3.	Kathkuiyan	610	65(1)	14/24"×48"	E	400
4.	Munderwa	711	75(1)	14/25"×48"	E	500
5.	Bhatni	738	175(2)	11/30"×60"	E	600
6.	Lakshmiganj	744	225(2)	14/24"×48"	E	400
7.	Gauri Bazar	750	(I) 60(1) (II) 35(1)	15/20"×36" 11/20"×36"	E E	160 100
8.	Walterganj	772	200(2)	17/24"×48"	E	550
9.	Khadda	773	52(1)	14/24"×48"	E	640
10.	Ramkola (MK)	791	195(2)	14/24"×48"	E	400
11.	Barabanki	806	340(2)	14/24"×48"	E	500
12.	Chhitauni	813	60(1)	14/24"×48"	E	240
13.	Burhwal	813	110(2)	12/20½"×36" 6/24"×48"	E	270
14.	Pipraich	813	150(2)	14/24"×48"	E	430
15.	Babhnan	813	160(2)	14/24"×48"	E	400
16.	Purtabpore	904	NA	NA	NA	NA
17.	Tulsipur	904	255(2)	12/29"×56"	E	550
18.	Balrampur	904	270(2)	15/28"×56"	E	550
19.	Baitalpur	914	80(1)	14/28"×56"	E	480
20.	Seorahi	940	220(2)	17/78"×56"	E	700
21.	Deoria	965	140(1)	14/27"×54"	E	950
22.	Captainganj	970	NA	NA	NA	NA
23.	Shahganj	1,016	120(1)	17/26"×54"	E	700
24.	Ghughli	1,016	110(1)	17/24"×48"	E	500
25.	Padrauna	1,016	(I) 100(1) (II) 75(1)	14/26"×54" 14/24"×48"	E E	204
26.	Anandnagar	1,016	160(2)	18/24"×48"	E	550
27.	Basti	1,025	255(2)	16/24"×48"	E	750
28.	Jarwal Road	1,118	NA	NA	NA	NA
29.	Biswan	1,219	200(2)	17/24"×48"	E	480
30.	Motinagar	1,321	250(2)	15/28"×57"	E	625
31.	Nawabganj	1,524	220(2)	14/29"×56"	E	600
32.	Ramkola (P)	1,524	(I) 200(2) (II) 240(2)	17/24"×48" 16/24"×48"	E E	500 500
33.	Sardarnagar	2,286	(I) 195(2) (II) 320(2)	14/28"×54" 14/34"×72"	E E	400 1,000

E = Steam Engine. NA = Not Available.

Source.—Factory Returns.

TABLE III-B

Power and Steam Generating Plants

Sl. No.	Name of Factory	Capacity (tonnes/day)	Power generating unit (total K.W.)	Boilers No./H.S. pressure (sq ft.) (p.s.i).	H.S. per cent boiler H.S. Economizer	H.S. per cent boiler H.S. Super heater
1	2	3	4	5	6	7
1.	Khalilabad	559	58	3/8727/150	Nil	Nil
2.	Siswabazar	559	156	4/15600/160	Nil	Nil
3.	Kathkuiyan	610	107	3/11700/160	Nil	Nil
4.	Munderwa	711	89	4/15408/110	Nil	Nil
5.	Bhatni	738	122	5/21500/160	Nil	Nil
6.	Lakshmiganj	744	70	5/14400/125 /556 3/190	Nil	Nil
7.	Gauri Bazar	750	445	3/14340/165	Nil	15
8.	Walterganj	772	219	5/19446/160	6	6
9.	Khadda	773	45	3/10758/160	Nil	Nil
10.	Ramkola (M.K.)	791	85	5/14823/160	Nil	Nil
11.	Barabanki	806	100	5/16057/160	25	In one boiler
12.	Chhitauni	813	152	6/18322/160	Nil	Nil
13.	Burhwal	813	500	4/14400/150	Nil	Nil
14.	Pipraich	813	92	5/16230/140	6	Nil
15.	Babhnan	813	80	6/18600/160	Nil	Nil
16.	Purtabpore	904	NA	NA	NA	NA
17.	Tulsipur	904	950	5/17245/165	Nil	16
18.	Balrampur	904	670	4/14816/150	Nil	13
19.	Baitalpur	914	308	4/13000/160	Nil	5
20.	Seorahi	940	550	5/23685/160	27	8
21.	Deoria	965	400	4/15995/160	Nil	In one boiler only
22.	Captainganj	970	NA	NA	NA	NA
23.	Shahganj	1,016	—	4/17600/160	12	Nil
24.	Ghughli	1,016	163	3/15201/120 1/5320/160	Nil	Nil
25.	Padrauna	1,016	250	5/18460/125	Nil	Nil
26.	Anandnagar	1,016	400	6/20180/NA	Nil	In 2 boilers
27.	Basti	1,025	1,000	4/15582/160	Nil	10
28.	Jarwal Road	1,118	NA	NA	NA	NA
29.	Biswan	1,219	414	6/22098/160 1/3140/125	Nil	Nil
30.	Motinagar	1,321	1,500	5/21080/160	Nil	13
31.	Nawabganj	1,524	1,000	4/24000/160	8	5
32.	Ramkola (P)	1,524	811	7/25545/160	4	Nil
33.	Sardaranagar	2,286	3,560	6/40075/200 2/4010/150	Nil	In all the boilers

NA=Not Available.

Source.—Factory Returns.

TABLE III-Ci

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Juice weighing manual/ auto-matic	Juice heaters: Total H.S. (sq. ft.)	Juice heaters: Vertical or horizontal	Juice heaters: Vapour line Juice heater H.S. (sq. ft.)
1	2	3	4	5	6	7
1.	Khalilabad . . .	559	M	1,450	H	Nil
2.	Siswabazar . . .	559	M	1,220 2,000	H V	Nil
3.	Kathkuiyan . . .	610	A	1,700	NA	Nil
4.	Munderwa . . .	711	M	1,929	H	Nil
5.	Bhatni . . .	738	M	2,900	H	Nil
6.	Lakshmiganj . . .	744	M	1,800 1,000	H V	Nil
7.	Gauri Bazar . . .	750	A	1,800	H	Nil
8.	Walterganj . . .	772	A	3,050	V	Nil
9.	Khadda . . .	773	M	1,788	H	Nil
10.	Ramkola (M.K.) . .	791	M	2,400	H	Nil
11.	Barabanki . . .	806	A	3,000	V	Nil
12.	Chhitauni . . .	813	M	2,700	H	Nil
13.	Burhwal . . .	813	A	2,250	V	Nil
14.	Pipraich . . .	813	M	2,533	H	Nil
15.	Babhnan . . .	813	A	1,860	H	Nil
16.	Purtabpore . . .	904	A	2,500	H	Nil
17.	Tulsipur . . .	904	M	4,000	V	1,000
18.	Balrampur . . .	904	A	3,062	NA	1,200
19.	Baitalpur . . .	914	M	4,990	V	Nil
20.	Seorahi . . .	940	M	4,400	V	Nil
21.	Deoria . . .	965	M	3,600	V	1,000
22.	Captainganj . . .	970	A	1,250 2,400	V H	Nil
23.	Shahganj . . .	1,016	M	2,000	H	Nil
24.	Ghughli . . .	1,016	A4	2,68	H	Nil
25.	Padrauna . . .	1,016	M	3,600	H	Nil
26.	Anandnagar . . .	1,016	A	1,800 1,200	H V	Nil Nil
27.	Basti . . .	1,025	A	2,100	V	Nil
28.	Jarwal Road . . .	1,118	A	2,960	V	Nil
29.	Biswan . . .	1,219	A	2,800	V	Nil
30.	Motinagar . . .	1,321	A	3,800	V	1,500
31.	Nawabganj . . .	1,524	A	4,000	V	Nil
32.	Ramkola (P) . . .	1,524	A	4,000	V	1,250
33.	Sardarnagar . . .	2,286	A	9,735	V	Nil

A=Automatic
M=Manual
N.A.=Not Available.

V=Vertical
H=Horizontal

Source.—Factory Returns.

TABLE III-Cii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Sulphitation or carbonation tanks	Settling	Filtration	Pre-Heater H.S. (sq. ft.)	Vapour cell H.S. (sq. ft.)	Evaporators	
								Type	Vapour beleeding
1	2	3	4	5	6	7	8	9	10
1.	Khalilabad	559	B	C	B	800	Nil	T	No
2.	Siswabazar	559	B	C	B	Nil	Nil	T	No
3.	Kathkuiyan	610	B	C	B	Nil	Nil	T	No
4.	Munderwa	711	B	C	B	Nil	Nil	Q&T	No
5.	Bhatni	738	B	C	B	Nil	Nil	Q&T	No
6.	Lakshmiganj	744	B	C	B	Nil	Nil	Q	No
7.	Gauri Bazar	750	B	C	C	Nil	Nil	Q	No
8.	Walterganj	772	B	C	B	Nil	Nil	Q	No
9.	Khadda	773	B	C	B	Nil	Nil	T	No
10.	Ramkola (MK)	791	B	C	B	Nil	Nil	Q	No
11.	Barabanki	806	B	C	B	3,750	Nil	T	No
12.	Chhitauni	813	B	C	B	3,200	Nil	T	No
13.	Burhwal	813	B	C	C	Nil	Nil	Q	No
14.	Pipraich	813	B	C	B	—	Nil	Q	No
15.	Babhnan	813	B	C	B	Nil	Nil	Q	No
16.	Purtabpore*	904	B	—	B	100	Nil	Q	No
17.	Tulsipur	904	B	C	B	Nil	Nil	Q	Yes
18.	Balrampur	904	B	C	C	Nil	Nil	Q	No
19.	Baitalpur	914	B	C	B	Nil	Nil	Q	Yes
20.	Seorahi	940	B	C	C	600	Nil	Q	No
21.	Deoria	965	B	C	C	600	Nil	T	Yes
22.	Captainganj	970	B	C	B	Nil	Nil	Q&T	Yes
23.	Shahganj	1,016	B	C	B	600	Nil	T	No
24.	Ghughli	1,016	B	C	B	Nil	Nil	Q&T	No
25.	Padrauna	1,016	B	C	C	Nil	Nil	T	No
26.	Anandnagar	1,016	C	C	B	600	Nil	Q	No
27.	Basti*	1,025	B	—	B	Nil	Nil	Q	No
28.	Jarwal Road	1,118	B	C	B	500	Nil	Q	Yes
29.	Biswan	1,219	B	C	B	Nil	Nil	Q	Yes
30.	Motinagar	1,321	B	C	B	Nil	Nil	Q	Yes
31.	Nawabganj	1,524	B	C	B	Nil	Nil	Q	No
32.	Ramkola (P)*	1,524	B	—	B	NA	Nil	Q	No
33.	Sardarnagar	2,286	C	C	C	Nil	Nil	Q	Yes

B=Batch.
C=Continuous.
T=Triple.
Q=Quadruple.
NA=Not Available.

Source.—Factory Returns.

*Carbonation Factories

TABLE III-Ciii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Pans		Low grade crystalliser	
			Total capacity (tonnes)	% coil capacity	No.	% water cooled capacity
1	2	3	4	5	6	7
1.	Khalilabad . . .	559	60	25	5	Nil
2.	Siswabazar . . .	559	102	18	6	66
3.	Kathkuiyan . . .	610	73	75	5	Nil
4.	Munderwa . . .	711	72	50	5	Nil
5.	Bhatni . . .	738	120	57	5	Nil
6.	Lakshmiganj . . .	744	124	19	6	50
7.	Gauri Bazar . . .	750	86	65	3	25
8.	Walterganj . . .	772	86	33	6	24
9.	Khadda . . .	773	74	50	6	Nil
10.	Ramkola (M.K.) . .	791	88	18	5	80
11.	Barabanki . . .	806	88	50	6	Nil
12.	Chhitauni . . .	813	94	33	4	100
13.	Burhwal . . .	813	91	24	3	50
14.	Pipraich . . .	813	75	40	6	Nil
15.	Babhnan . . .	813	108	33	8	Nil
16.	Purtabpore . . .	904	120	Nil	6	Nil
17.	Tulsipur . . .	904	132	Nil	6	33
18.	Balrampur . . .	904	112	Nil	6	55
19.	Baitalpur . . .	914	114	18	6	Nil
20.	Seorahi . . .	940	165	9	9	Nil
21.	Deoria . . .	965	126	22	6	100
22.	Captainganj . . .	970	156	Nil	6	Nil
23.	Shahganj . . .	1,016	115	17	5	100
24.	Ghughli . . .	1,016	109	37	5	100
25.	Padrauna . . .	1,016	156	52	7	Nil
26.	Anandnagar . . .	1,016	134	25	7	Nil
27.	Basti . . .	1,025	106	28	7	Nil
28.	Jarwal Road . . .	1,118	106	26	8	50
29.	Biswan . . .	1,219	108	17	6	Nil
30.	Motinagar . . .	1,321	156	28	8	100
31.	Nawabganj . . .	1,524	146	Nil	5	80
32.	Ramkola (P) . . .	1,524	260	Nil	5	Nil
33.	Sardarnagar . . .	2,286	329	66	9	Nil

Source.—Factory Returns.

TABLE III-Civ

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Centrifugals			
			Ordinary		High speed	
			No.	Size	No.	Size
1	2	3	4	5	6	7
1.	Khalilabad . . .	559	20	18"×30"	..	..
2.	Siswabazar . . .	559	29	18"×36"	..	..
3.	Kathkuiyan . . .	610	18 3	18"×36" 24"×42"	..	..
4.	Munderwa . . .	711	23	18"×36"	..	..
5.	Bhatni . . .	738	40	18"×30"	..	..
6.	Lakshmiganj . .	744	18 10	18"×30" 20"×42"	..	..
7.	Gauri Bazar . .	750	8 11	24"×42" 18"×36"	..	..
8.	Walterganj . . .	772	25	18"×36"	..	..
9.	Khadda . . .	773	24	18"×36"	..	..
10.	Ramkola (MK) . .	791	8 23	18"×30" 18"×36"	..	..
11.	Barabanki . . .	806	10 16	18"×36" 20"×42"	..	..
12.	Chhitauni . . .	813	31	18"×36"	..	..
13.	Burhwal . . .	813	5 14	20"×42" 18"×36"	..	..
14.	Pipraich . . .	813	11 15 12	18"×36" 18"×36" 20"×42"	..	..
15.	Babhnan . . .	813	6 23	20"×42" 18"×36"	..	..
16.	Purtabpore . . .	904	10 4 17	22"×42" 18"×36" 18"×30"	..	..
17.	Tulsipur . . .	904	13 17	24"×42" 24"×36"	..	..
18.	Balrampur . . .	904	24 10	18"×36" 24"×42"	..	..
19.	Baitalpur . . .	914	31	18"×36"	..	..
20.	Seorahi . . .	940	34	20"×42"	..	..
21.	Deoria . . .	965	35	18"×36"	..	..
22.	Captainganj . .	970	34 4	18"×36" 24"×42"	..	..
23.	Shahganj . . .	1,016	31	18"×36"	..	..
24.	Ghughli . . .	1,016	22 4	20"×40" 18"×36"	..	..
25.	Padrauna . . .	1,016	39	18"×36"	..	..
26.	Anandnagar . .	1,016	7 30	20"×42" 18"×30"	..	..
27.	Basti . . .	1,025	30 4	18"×30" 18"×36"	..	..
28.	Jarwal Road . .	1,118	31	18"×36"	..	..
29.	Biswan . . .	1,219	25 5	18"×36" 18"×30"	..	..

TABLE III-Civ (*contd.*)

1	2	3	4	5	6	7
30.	Motinagar . . .	1,321	12 9 15	20″×42″ 23″×42″ 18″×30″	..	..
31.	Nawabganj . . .	1,524	8 18	20″×42″ 18″×36″	3	25″×49″
32.	Ramkola (P) . .	1,524	35 9 4	18″×36″ 24″×42″ 24″×48″	..	..
33.	Sardarnagar . .	2,286	32 27	20″×42″ 18″×36″	2	30″×40″

Source. —Factory Returns.

TABLE IV-Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad	12·39	12·26	12·07	12·37
2.	Siswabazar . . .	12·08	12·31	11·72	12·36
3.	Kathkuiyan . . .	12·35	12·46	12·28	12·41
4.	Munderwa	12·51	12·53	12·11	12·09
5.	Bhatni	12·51	12·46	12·64	12·62
6.	Lakshmiganj . . .	12·26	12·32	11·88	11·99
7.	Gauri Bazar . . .	13·05	12·80	12·63	12·73
8.	Walterganj . . .	12·32	12·89	12·49	12·60
9.	Khadda	12·35	12·63	12·15	12·70
10.	Ramkola (MK) . . .	12·34	12·40	12·23	12·22
11.	Barabanki	12·84	12·69	12·48	13·17
12.	Chhitauni	12·41	12·38	11·85	12·28
13.	Burhwal	12·40	12·50	12·09	12·23
14.	Pipraich	12·37	12·60	11·96	11·92
15.	Babhnan	12·79	12·72	12·87	12·80
16.	Purtabpore . . .	N.A.	N.A.	N.A.	N..A.
17.	Tulsipur	12·31	12·07	12·59	12·67
18.	Balrampur	12·57	12·84	12·42	12·60
19.	Baitalpur	11·93	11·83	11·76	12·07
20.	Seorahi	12·40	12·43	12·11	12·60
21.	Deoria	11·99	11·77	11·84	12·41
22.	Captainganj . . .	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	11·99	11·88	12·39	12·25
24.	Ghughli	11·77	11·94	11·80	11·76
25.	Padrauna	12·22	12·53	12·32	12·70
26.	Anandnagar . . .	12·05	11·81	12·15	12·09
27.	Basti	12·58	13·02	12·94	12·73
28.	Jarwal Road . . .	N.A.	N.A.	N.A.	N.A.
29.	Biswan	13·41	12·86	13·01	13·44
30.	Motinagar . . .	12·78	12·75	12·53	12·57
31.	Nawabganj . . .	12·09	12·63	12·40	12·14
32.	Ramkola (P) . . .	12·67	12·85	12·84	12·42
33.	Sardarnagar . . .	12·54	12·78	12·61	12·58

N.A.=Not Available.

Source.—Factory Returns.

TABLE IV-Aii

Cane Quality (Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad . . .	15·01	15·59	14·27	15·08
2.	Siswabazar . . .	17·08	16·56	16·67	17·48
3.	Kathkuiyan . . .	18·48	19·63	16·59	16·10
4.	Munderwa	16·62	16·09	16·15	15·89
5.	Bhatni	16·45	17·68	15·64	15·71
6.	Lakshmiganj . . .	14·56	15·35	14·20	15·73
7.	Gauri Bazar . . .	18·60	18·54	16·98	17·80
8.	Walterganj . . .	17·66	16·86	17·22	18·76
9.	Khadda	17·16	15·95	16·48	16·45
10.	Ramkola (MK) . . .	16·39	16·40	16·59	14·23
11.	Barabanki	18·74	18·40	18·72	18·53
12.	Chhitauni	16·54	16·55	16·22	15·87
13.	Burhwal	17·46	17·45	18·27	17·45
14.	Pipraich	15·27	14·83	16·03	14·96
15.	Babhnan	15·23	15·44	15·39	16·36
16.	Purtabpore . . .	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	16·54	16·75	16·16	17·22
18.	Balrampur	17·04	17·48	17·19	17·36
19.	Baitalpur	15·46	16·26	16·13	15·17
20.	Seorahi	18·10	16·83	15·84	15·83
21.	Deoria	17·05	17·40	17·80	16·61
22.	Captainganj . . .	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	15·48	15·94	16·16	15·81
24.	Ghughli	15·79	14·63	15·89	15·55
25.	Padrauna	18·82	17·34	16·98	16·85
26.	Anandnagar . . .	14·77	14·69	16·13	15·78
27.	Basti	16·77	15·84	16·27	15·71
28.	Jarwal Road . . .	N.A.	N.A.	N.A.	N.A
29.	Biswan	15·86	16·76	16·96	16·27
30.	Motinagar . . .	16·51	16·69	16·04	16·28
31.	Nawabganj . . .	17·57	17·88	17·92	16·76
32.	Ramkola (P) . . .	16·79	16·51	15·99	16·18
33.	Sardarnagar . . .	15·99	16·24	16·72	17·35

N.A.=Not Available.

Source.—Factory Returns.

TABLE IV-Aiii

Cane Quality (Primary juice purity)

Sl. No.	Name of Factory	Primary juice purity			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad . . .	83·06	83·26	86·02	86·76
2.	Siswabazar . . .	82·83	83·97	81·36	84·16
3.	Kathkuiyan . . .	83·82	84·56	83·64	85·56
4.	Munderwa	84·40	84·14	85·00	86·21
5.	Bhatni	84·01	83·82	84·66	86·53
6.	Lakshmiganj . . .	83·22	83·07	82·71	84·52
7.	Gauri Bazar . . .	84·81	84·66	85·77	87·22
8.	Walterganj . . .	82·89	83·65	84·01	86·22
9.	Khadda	84·22	84·93	82·28	84·26
10.	Ramkola (MK) . . .	83·40	84·36	83·88	85·25
11.	Barabanki	84·93	83·64	84·54	85·97
12.	Chhitauni	84·12	83·73	82·30	84·99
13.	Burhwal	84·16	84·57	83·58	84·12
14.	Pipraich	84·29	83·43	84·59	86·10
15.	Babhnan	83·81	83·39	84·79	85·05
16.	Purtabpore . . .	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	83·75	81·86	84·44	85·70
18.	Balrampur	84·62	84·97	84·13	85·62
19.	Baitalpur	83·94	83·84	82·98	84·75
20.	Seorahi	83·67	83·99	83·32	85·21
21.	Deoria	83·34	83·07	83·95	85·90
22.	Captainganj . . .	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	84·86	82·61	85·16	84·24
24.	Ghughli	85·07	84·38	83·66	85·04
25.	Padrauna	84·08	84·77	83·06	85·35
26.	Anandnagar . . .	81·99	82·01	83·30	85·16
27.	Basti	82·64	84·90	85·49	86·37
28.	Jarwal Road . . .	N.A.	N.A.	N.A.	N.A.
29.	Biswan	80·08	84·74	83·31	85·99
30.	Motinagar . . .	85·69	84·48	85·96	85·44
31.	Nawabganj . . .	82·82	83·99	85·44	86·22
32.	Ramkola (P) . . .	83·50	84·11	84·05	85·71
33.	Sardarnagar . . .	84·33	83·95	84·66	86·66

N.A.=Not Available.

Source.—Factory Returns.

सत्यमेव जयते

TABLE IV-Bi

Time Account (Duration of season)

Sl. No.	Name of Factory	Duration of season (days)			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad . . .	133	173	109	64
2.	Siswabazar . . .	179	173	182	103
3.	Kathkuiyan . . .	181	191	174	91
4.	Munderwa	156	158	110	73
5.	Bhatni	132	140	118	46
6.	Lakshmiganj . . .	167	168	156	95
7.	Gauri Bazar . . .	139	175	130	76
8.	Walterganj . . .	170	167	143	92
9.	Khadda	174	173	164	98
10.	Ramkola (MK) . . .	167	173	165	93
11.	Barabanki	115	152	124	93
12.	Chhitauni	172	177	188	87
13.	Burhwal	136	158	130	103
14.	Pipraich	133	178	146	72
15.	Babhnan	130	154	125	87
16.	Purtabpore . . .	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	144	180	153	79
18.	Balrampur	109	137	123	58
19.	Baitalpur	154	190	157	101
20.	Seorahi	182	184	167	83
21.	Deoria	138	164	147	81
22.	Captainganj . . .	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	120	140	104	75
24.	Ghughli	165	179	162	80
25.	Padrauna	155	149	160	81
26.	Anandnagar . . .	160	170	156	69
27.	Basti	159	152	128	85
28.	Jarwal Road . . .	N.A.	N.A.	N.A.	N.A.
29.	Biswan	136	195	156	132
30.	Motinagar . . .	117	154	118	100
31.	Nawabganj . . .	121	134	115	61
32.	Ramkola (P) . . .	182	150	155	86
33.	Sardarnagar . . .	142	191	146	81

N.A.=Not Available.

Source.—Factory Returns.

TABLE IV-Bii

Time Account (Time loss)

Sl. No.	Name of Factory	Time lost per cent available			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad	16·54	17·82	18·80	15·37
2.	Siswabazar	12·26	14·30	16·31	12·12
3.	Kathkuiyan	15·65	17·79	22·85	22·28
4.	Munderwa	8·60	16·99	22·05	21·45
5.	Bhatni	29·60	21·10	25·60	46·90
6.	Lakshmiganj	17·35	18·66	17·05	15·31
7.	Gauri Bazar	14·46	15·39	20·85	16·45
8.	Walterganj	16·05	11·48	11·50	8·49
9.	Khadda	16·62	13·79	28·69	18·98
10.	Ramkola (MK)	18·91	19·12	16·12	16·40
11.	Barabanki	23·93	24·86	23·73	24·55
12.	Chhitauni	14·76	19·09	19·23	14·88
13.	Burhwal	13·17	12·42	18·94	29·48
14.	Pipraich	39·22	27·49	25·65	23·47
15.	Babhnan	25·40	23·70	27·30	22·50
16.	Purtabpore	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	20·96	23·50	19·42	16·52
18.	Balrampur	16·95	15·65	20·38	24·67
19.	Baitalpur	11·45	10·14	15·54	11·51
20.	Seorahi	18·05	20·68	21·83	15·96
21.	Deoria	19·80	15·84	14·14	9·27
22.	Captainganj	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	12·56	16·28	17·04	11·11
24.	Ghughli	15·76	19·23	18·02	11·22
25.	Padrauna	10·81	11·47	13·66	15·16
26.	Anandnagar	11·88	15·04	16·89	11·09
27.	Basti	19·90	14·33	17·05	11·08
28.	Jarwal Road	N.A.	N.A.	N.A.	N.A.
29.	Biswan	16·62	16·67	19·08	13·75
30.	Motinagar	19·41	16·87	15·55	15·10
31.	Nawabganj	18·20	22·00	22·80	26·90
32.	Ramkola (P)	10·70	22·70	20·10	18·50
33.	Sardarnagar	24·58	24·10	26·55	20·21

N.A.=Not Available.

Source.—Factory Returns.

TABLE IV-Ci

Technical Efficiency (Recovery)

(East U.P.)

Sl. No.	Name of Factory	Recovery per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad . . .	9·75	9·65	9·65	9·90
2.	Siswabazar . . .	9·49	9·79	9·04	9·78
3.	Kathkuiyan . . .	9·40	9·34	8·83	9·51
4.	Munderwa	9·86	9·85	9·51	9·66
5.	Bhatni	9·10	9·19	9·01	9·60
6.	Lakshmiganj . . .	9·54	9·47	9·11	9·10
7.	Gauri Bazar . . .	10·37	10·16	10·12	10·27
8.	Walterganj . . .	9·70	10·28	9·79	10·03
9.	Khadda	9·50	9·78	8·99	9·62
10.	Ramkola (M.K.) . .	9·45	9·32	9·34	9·59
11.	Barabanki	9·80	9·72	9·62	10·21
12.	Chhitauni	9·96	9·77	9·16	9·85
13.	Burhwal	9·88	9·95	9·45	9·24
14.	Pipraich	9·27	9·43	9·23	9·23
15.	Babhnan	10·44	10·21	10·44	10·41
16.	Purtabpore . . .	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	9·51	8·95	9·70	10·04
18.	Balrampur	9·93	10·17	9·72	10·09
19.	Baitalpur	9·45	9·25	9·27	9·72
20.	Seorahi	9·45	9·56	8·88	9·78
21.	Deoria	9·48	9·31	9·16	10·23
22.	Captainganj . . .	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	9·80	9·53	10·29	10·09
24.	Ghughli	9·25	9·11	9·11	9·36
25.	Padrauna	9·11	9·51	8·88	9·88
26.	Anandnagar . . .	9·54	9·37	9·45	9·73
27.	Basti	10·11	10·80	10·69	10·58
28.	Jarwal Road . . .	N.A.	N.A.	N.A.	N.A.
29.	Biswan	10·50	9·52	9·82	10·36
30.	Motinagar . . .	10·23	10·04	9·94	10·04
31.	Nawabganj . . .	9·54	9·95	9·67	9·70
32.	Ramkola (P) . . .	9·85	10·05	9·69	10·06
33.	Sardarnagar . . .	9·98	9·86	9·78	9·84

N.A.=Not Available.

Source.—Factory Returns.

TABLE IV-Cii

Technical Efficiency (Total losses)

(East U.P.)

Sl. No.	Name of Factory	Total losses per cent cane 1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad	2·66	2·63	2·44	2·48
2.	Siswabazar	2·61	2·54	2·70	2·60
3.	Kathkuiyan	2·97	3·14	3·47	2·92
4.	Munderwa	2·67	2·70	2·62	2·45
5.	Bhatni	3·41	3·27	3·53	3·02
6.	Lakshmiganj	2·74	2·87	2·79	2·91
7.	Gauri Bazar	2·70	2·60	2·53	2·48
8.	Walterganj	2·64	2·63	2·72	2·59
9.	Khadda	2·87	2·87	3·18	3·10
10.	Ramkola (MK)	2·91	3·10	2·92	2·65
11.	Barabanki	3·06	2·99	2·88	2·98
12.	Chhitauni	2·45	2·63	2·71	2·45
13.	Burhwal	2·54	2·57	2·67	3·01
14.	Pipraich	3·12	3·19	2·75	2·75
15.	Babhnan	2·37	2·53	2·45	2·41
16.	Purtabpore	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	2·80	3·12	2·89	2·63
18.	Balrampur	2·66	2·69	2·72	2·53
19.	Baitalpur	2·49	2·60	2·51	2·37
20.	Seorahi	2·97	2·89	3·25	2·84
21.	Deoria	2·62	2·47	2·71	2·20
22.	Captainganj	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	2·21	2·37	2·12	2·18
24.	Ghughli	2·54	2·85	2·71	2·42
25.	Padrauna	3·13	3·04	3·46	2·84
26.	Anandnagar	2·53	2·46	2·72	2·38
27.	Basti	2·49	2·24	2·27	2·17
28.	Jarwal Road	N.A.	N.A.	N.A.	N.A.
29.	Biswan	2·96	3·51	3·06	3·07
30.	Motinagar	2·57	2·73	2·61	2·55
31.	Nawabganj	2·67	2·70	2·70	2·46
32.	Ramkola (P)	2·84	2·82	2·57	2·38
33.	Sardarnagar	2·58	2·94	2·85	2·76

N.A.=Not Available.

Source.—Factory Returns.

TABLE IV-Ciii

Technical Efficiency (Reduced overall extraction)

Sl. No.	Name of Factory	Reduced overall extraction 1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad	83·14	82·69	81·68	81·56
2.	Siswabazar	84·18	84·07	83·73	84·22
3.	Kathkuiyan	82·08	81·23	78·83	80·22
4.	Munderwa	83·20	83·37	82·89	89·96
5.	Bhatni	78·58	79·95	76·55	80·11
6.	Lakshmiganj	82·13	82·72	81·09	80·31
7.	Gauri Bazar	83·77	83·90	83·33	83·08
8.	Walterganj	84·65	84·40	83·40	83·63
9.	Khadda	81·77	81·27	80·66	80·97
10.	Ramkola (MK)	82·09	85·95	81·27	80·90
11.	Barabanki	81·92	82·90	82·93	82·17
12.	Chhitauni	84·57	83·85	83·39	83·93
13.	Burhwal	84·61	84·29	84·15	81·72
14.	Pipraich	79·13	79·56	81·28	80·04
15.	Babhnan	85·29	84·25	84·55	84·69
16.	Purtabpore	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	81·57	80·60	80·81	82·46
18.	Balrampur	82·95	83·20	82·56	83·49
19.	Baitalpur	83·53	80·81	83·67	83·61
20.	Seorahi	82·11	81·78	79·24	81·07
21.	Deoria	89·88	90·27	88·00	90·52
22.	Captainganj	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	84·89	85·31	87·03	86·05
24.	Ghughli	82·38	80·01	81·33	82·79
25.	Padrauna	80·93	80·87	79·19	81·21
26.	Anandnagar	79·02	79·19	77·61	80·31
27.	Basti	85·58	86·31	85.80	85·44
28.	Jarwal Road	N.A.	N.A.	N.A.	N.A.
29.	Biswan	81·84	79·31	81·01	80·38
30.	Motinagar	82·94	82·75	82·00	83·01
31.	Nawabganj	84·53	84·29	82·97	83·53
32.	Ramkola (P)	82·99	82·97	83·44	84·09
33.	Sardarnagar	84·18	82·28	82·39	82·34

N.A.=Not Available.

Source—**Factory Returns.**

सत्यमेव जयते

TABLE IV-Di

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed % cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad	32·68	33·48	32·73	32·62
2.	Siswabazar	37·20	36·76	36·31	38·97
3.	Kathkuiyan	39·97	43·49	40·84	42·23
4.	Munderwa	36·06	37·02	38·52	38·92
5.	Bhatni	40·19	36·95	38·07	37·90
6.	Lakshmiganj	35·64	34·39	34·62	40·08
7.	Gauri Bazar	37·07	36·51	35·44	36·92
8.	Walterganj	43·90	37·68	40·11	43·45
9.	Khadda	41·87	36·44	39·42	37·21
10.	Ramkola (MK)	40·15	40·47	38·88	37·78
11.	Barabanki	44·34	40·13	41·69	43·18
12.	Chhitauni	38·79	41·05	39·92	39·36
13.	Burhwal	36·86	37·16	42·46	42·19
14.	Pipraich	35·16	33·06	36·40	34·96
15.	Babhnan	33·04	33·92	35·14	36·18
16.	Purtabpore	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	35·20	36·21	34·58	35·65
18.	Balrampur	36·31	37·62	37·21	38·83
19.	Baitalpur	32·56	34·79	35·20	31.54
20.	Seorahi	39·70	36·50	38·26	36·20
21.	Deoria	37·37	36·09	37·83	31·04
22.	Captainganj	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	31·82	33·95	34·34	33·31
24.	Ghughli	33·96	34·26	35·12	35·23
25.	Padrauna	41·83	40·91	41·11	41·50
26.	Anandnagar	33·02	31·86	37·10	35·60
27.	Basti	42·57	37·39	37·71	37·78
28.	Jarwal Road	N.A.	N.A.	N.A.	N.A.
29.	Biswan	36·44	39·04	40·06	38·01
30.	Motinagar	35·96	37·21	35·38	35·97
31.	Nawabganj	37·30	37·54	38·74	36·17
32.	Ramkola (P)	37·16	37·42	36·00	36·76
33.	Sardarnagar	30·99	30·32	30·01	31·99

N.A.=Not Available.

Source.—Factory Returns.

सत्यमेव जयते

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed % cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Khalilabad	0·64	0·60	1·92	0·09
2.	Siswabazar	0·92	1·42	0·72	1·54
3.	Kathkuiyan	1·65	2·65	5·40	8·45
4.	Munderwa	0·73	1·93	3·31	4·22
5.	Bhatni	3·43	2·02	3·49	4·14
6.	Lakshmiganj	5·20	1·68	4·41	5·91
7.	Gauri Bazar	0·46	0·19	0·60	0·80
8.	Walterganj	7·40	2·63	4·42	4·19
9.	Khadda	4·67	2·02	3·37	1·94
10.	Ramkola (MK)	4·76	6·29	3·26	6·32
11.	Barabanki	4·11	1·12	1·92	4·03
12.	Chhitauni	3·87	5·71	4·63	3·76
13.	Burhwal	0·51	0·34	3·76	4·02
14.	Pipraich	1·59	1·27	2·39	2·43
15.	Babhnan	0·69	1·00	0·18	1·11
16.	Purtabpore	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	0·35	1·66	1·20	0·98
18.	Balrampur	0·33	0·92	0·57	2·52
19.	Baitalpur	1·01	1·35	1·98	0·54
20.	Seorahi	0·81	0·09	4·24	0·94
21.	Deoria	2·64	0·56	1·05	0·33
22.	Captainganj	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	...	0·58	0·39	0·39
24.	Ghughli	1·43	2·42	1·05	1·99
25.	Padrauna	2·81	4·79	4·73	7·84
26.	Anandnagar	1·17	0·54	2·30	1·60
27.	Basti	6·58	3·16	2·12	3·00
28.	Jarwal Road	N.A.	N.A.	N.A.	N.A.
29.	Biswan	1·80	3·08	2·96	3·01
30.	Motinagar	0·83	1·11	1·31	0·86
31.	Nawabganj	0·47	0·23	0·51	0·68
32.	Ramkola (P)	0·76	1·87	1·42	1·86
33.	Sardarnagar	..	..	..	..

N.A. = Not Available.

Source.—Factory Returns.

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of Factory	Capacity (tonnes/day)	Specifications of existing milling tandem	Expansion as asked for by the factories (tonnes/day)	Expansion as recommended by Cane Commissioner (tonnes/day)	Financial requirement as submitted by factories (lac Rs.)
1	2	3	4	5	6	7
1.	Khalilabad . . .	559	12/24″×48″	1,500	1,800	78·57
2.	Siswabazar . .	559	14/25″×48″	1,500	1,450	66·50
3.	Kathkuiyan . .	610	14/24″×48″	1,200	1,500	46·82
4.	Munderwa . . .	711	14/25″×48″	1,250	1,200	43·17
5.	Bhatni . . .	738	11/30″×60″	1,500	1,500	76·29
6.	Lakshmiganj . .	738	14/24″×48″	1,500	1,200	83·74
7.	Gauri Bazar . .	750 (I) (II)	15/20″×36″ 11/20″×36″	1,500	1,500	86·65
8.	Walterganj . . .	772	17/24″×48″	1,500	1,650	105·00
9.	Khadda . . .	773	14/24″×48″	1,500	1,250	89·35
10.	Ramkola (MK) . .	791	14/24″×48″	1,250	1,400	87·00
11.	Barabanki . . .	806	14/24″×48″	1,000	1,650	3·03
12.	Chhitauni . . .	813	14/24″×48″	1,500	1,500	38·16
13.	Burhwal . . .	813	12/20½″×36″ 6/24″×48″	1,200	1,250	65·20
14.	Pipraich . . .	813	14/24″×48″	1,250	1,250	59·49
15.	Babhnan . . .	813	14/24″×48″	1,500	1,250	83·30
16.	Purtabpore . . .	904	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur . . .	904	12/29″×56″	1,500	1,500	57·00
18.	Balrampur . . .	904	15/28″×56″	1,500	1,750	60·67
19.	Baitalpur . . .	914	14/28″×56″	1,500	1,500	50·10
20.	Seorahi . . .	940	17/28″×56″	1,500	2,000	25·41
21.	Deoria . . .	965	14/27″×54″	1,500	1,550	36·75
22.	Captainganj . .	970	N.A.	N.A.	N.A.	N.A.
23.	Shahganj . . .	1,016	17/26″×54″	1,500	1,950	58·20
24.	Ghughli . . .	1,016	17/24″×48″	2,000	1,500	73·41
25.	Padrauna . . .	1,016 (I) (II)	14/24″×48″ 14/25″×54″	2,000	2,000	84·15
26.	Anandnagar . .	1,016	18/24″×48″	1,500	1,500	54·41
27.	Basti . . .	1,025	16/24″×48″	1,500	1,500	97·10
28.	Jarwal Road . .	1,118	N.A.	N.A.	N.A.	N.A.
29.	Biswan . . .	1,219	17/24″×48″	2,000	2,220	30·00
30.	Motinagar . . .	1,321	15/28″×57″	2,000	2,400	73·93
31.	Nawabganj . . .	1,524	14/29″×56″	2,000	2,500	37·30
32.	Ramkola (P) . .	1,524 (I) (II)	17/24″×48″ 16/24″×48″	1,800	2,000	121·15
33.	Sardarnagar . .	2,286 (I) (II)	14/28″×54″ 14/34″×72″	3,000	3,200	20·72

N.A.=Not Available.

Source. –Factory Returns.

TABLE VI-A

Existing Strength of Labour and Labour Considered Surplus at Present and After Modernisation

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Total labour employed	Labour surplus now		Labour surplus after modernisation	
				Skilled & semi-skilled	Un-skilled	Skilled & semi-skilled	Un-skilled
1	2	3	4	5	6	7	8
1.	Khalilabad	559	632	Nil	Nil	Nil	Nil
2.	Siswabazar	559	973	60	200	Nil	Nil
3.	Kathkuiyan	610	836	89	88	123	100
4.	Munderwa	711	885	Nil	Nil	36	100
5.	Bhatni	738	951	30	75	Nil	250
6.	Lakshmiganj	744	871	15	20	75	170
7.	Gauri Bazar	750	847	2	Nil	Nil	Nil
8.	Walterganj	772	952	Nil	Nil	N.A.	N.A.
9.	Khadda	773	1,064	100	200	250	300
10.	Ramkola (MK)	791	1,006	Nil	Nil	Nil	153
11.	Barabanki	806	1,062	6	3	24	36
12.	Chhitauni	813	1,034	50	150	100	300
13.	Burhwal	813	913	21	55	24	83
14.	Pipraich	813	1,047	Nil	Nil	3	97
15.	Babhnan	813	738	Nil	Nil	Nil	62
16.	Purtabpore	904	N.A.	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	904	1,040	Nil	Nil	Nil	130
18.	Balrampur	904	1,152	6	24	9	81
19.	Baitalpur	914	N.A.	N.A.	N.A.	N.A.	N.A.
20.	Seorahi	940	1,155	6	Nil	34	136
21.	Deoria	965	1,066	88	189	Nil	Nil
22.	Captainganj	970	N.A.	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	1,016	1,077	Nil	Nil	Nil	81
24.	Ghughli	1,016	1,118	Nil	Nil	Nil	110
25.	Padrauna	1,016	1,415	220	209	220	209
26.	Anandnagar	1,016	816	Nil	Nil	14	150
27.	Basti	1,025	1,181	Nil	Nil	N.A.	N.A.
28.	Jarwal Road	1,118	N.A.	N.A.	N.A.	N.A.	N.A.
29.	Biswan	1,219	899	Nil	17	N.A.	N.A.
30.	Motinagar	1,321	1,150	17	Nil	9	96
31.	Nawabganj	1,524	1,190	Nil	Nil	Nil	94
32.	Ramkola (P)	1,524	1,382	Nil	Nil	62	110
33.	Sardarnagar	2,286	2,780	10	84	3	142
	TOTAL		31,232	720	1,314	986	2,990

N.A. = Not Available.

Source.—Factory Returns.

TABLE VI-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Man days/tonne of sugar 1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Khalilabad	559	10·1	9·2	12·5	11·1
2.	Siswabazar	559	14·8	14·1	16·6	14·1
3.	Kathkuiyan	610	15·7	16·8	19·7	18·7
4.	Munderwa	711	14·4	14·5	16·0	14·9
5.	Bhatni	738	16·8	14·0	15·9	18·3
6.	Lakshmiganj	744	15·3	13·9	14·1	15·1
7.	Gauri Bazar	750	11·9	12·4	13·5	12·5
8.	Walterganj	772	15·3	11·8	13·3	13·0
9.	Khadda	773	19·3	12·3	26·1	20·7
10.	Ramkola (MK)	791	15·4	15·9	13·5	15·4
11.	Barabanki	806	15·8	16·1	16·8	16·1
12.	Chhitauni	813	14·3	16·0	18·0	15·9
13.	Burhwal	813	17·1	16·0	18·3	18·8
14.	Pipraich	813	16·1	15·4	15·5	15·8
15.	Babhnan	813	11·2	11·0	11·5	10·4
16.	Purtabpore	904	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	904	14·6	15·0	13·5	11·3
18.	Balrampur	904	15·0	14·2	15·6	15·1
19.	Baitalpur	914	N.A.	N.A.	N.A.	N.A.
20.	Seorahi	940	13·7	14·7	15·6	12·9
21.	Deoria	965	14·8	13·9	15·4	11·9
22.	Captainganj	970	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	1,016	12·6	13·0	12·7	11·8
24.	Ghughli	1,016	15·2	16·8	16·6	15·0
25.	Padrauna	1,016	19·3	17·8	19·1	17·7
26.	Anandnagar	1,016	10·2	9·8	10·4	9·3
27.	Basti	1,025	17·5	13·6	14·0	13·2
28.	Jarwal Road	1,118	N.A.	N.A.	N.A.	N.A.
29.	Biswan	1,219	11·3	13·2	12·1	11·1
30.	Motinagar	1,321	10·4	10·5	10·2	10·0
31.	Nawabganj	1,524	12·4	12·9	12·6	13·9
32.	Ramkola (P)	1,524	13·5	12·3	11·2	10·0
33.	Sardarnagar	1,286	14·8	15·7	15·7	15·2

सत्यमेव जयते

N.A.=Not Available.

Source.—Factory Returns.

TABLE VII-A

Utilisation of By-products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (Average of 5 seasons)			
			Production (000 tonnes)	Used as fuel (000 tonnes)	Saved & sold (tonnes)	Value realised Rs.
1	2	3	4	5	6	7
1.	Khalilabad	559	22·74	22·72	21	N.A.
2.	Siswabazar	559	41·26	41·22	47	1,126
3.	Kathkuiyan	610	35·18	35·18	Nil	Nil
4.	Munderwa	711	29·60	29·60	Nil	Nil
5.	Bhatni	738	29·56	29·54	20	N.A.
6.	Lakshmiganj	744	32·64	32·64	Nil	Nil
7.	Gauri Bazar	750	35·30	34·18	1,112 (Only partly sold)	672
8.	Walterganj	772	39·56	39·56	Nil	Nil
9.	Khadda	773	34·00	34·00	Nil	Nil
10.	Ramkola (MK)	791	39·44	39·44	Nil	Nil
11.	Barabanki	806	37·34	37·34	Nil	Nil
12.	Chhitauni	813	41·70	41·70	Nil	Nil
13.	Burhwal	813	27·22	27·22	Nil	Nil
14.	Pipraich	813	38·68	38·68	Nil	Nil
15.	Babhnan	813	31·26	31·26	Nil	Nil
16.	Purtabpore	904	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	904	40·90	40·78	126	N.A.
18.	Balrampur	904	34·14	34·14	Nil	Nil
19.	Baitalpur	914	39·06	39·06	Nil	Nil
20.	Seorahi	940	53·72	53·72	Nil	Nil
21.	Deoria	965	40·84	38·50	2,339	N.A.
22.	Captainganj	970	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	1,016	33·74	33·46	280	9,676
24.	Ghughli	1,016	41·54	41·54	Nil	Nil
25.	Padrauna	1,016	49·12	49·12	Nil	Nil
26.	Anandnagar	1,016	41·14	36·94	4,200	N.A.
27.	Basti	1,025	39·26	39·26	Nil	Nil
28.	Jarwal Road	1,118	N.A.	N.A.	N.A.	N.A.
29.	Biswan	1,219	40·78	40·78	Nil	Nil
30.	Motinagar	1,321	49·52	48·64	874	20,138
31.	Nawabganj	1,524	43·76	43·78	Nil	Nil
32.	Ramkola (P)	1,524	65·88	65·88	4	176
33.	Sardarnagar	2,286	99·72	N.A.	3,946 (On dry basis)	1,00,916
	TOTAL		1,228·80 (for 30 factories).			

N.A.=Not Available.

Source.—Factory Returns.

TABLE VII-B

Utilisation of By-products (Molasses)

			Molasses (Average of 5 seasons)			
Sl. No.	Name of Factory	Capacity (tonnes/ day)	Production (000 tonnes)	Quantity utilised for distillery & trade (000 tonnes)	Surplus left (tonnes)	Value realised (000 Rs.)
1	2	3	4	5	6	7
1.	Khalilabad	559	2·72	2·72	Nil	11·48
2.	Siswabazar	559	4·80	4·36	446	20·48
3.	Kathkuiyan	610	4·00	4·00	Nil	9·52
4.	Munderwa	711	3·16	2·66	500	11·04
5.	Bhatni	738	3·50	N.A.	N.A.	N.A.
6.	Lakshmiganj	744	4·38	N.A.	N.A.	N.A.
7.	Gauri Bazar	750	3·82	3·82	Nil	20·98
8.	Walterganj	772	4·26	4·26	Nil	17·56
9.	Khadda	773	3·80	3·80	Nil	9·20
10.	Ramkola (MK)	791	4·30	4·18	120	13·38
11.	Barabanki	806	3·36	2·92	445	N.A.
12.	Chhitauni	813	4·30	4·30	Nil	6·12
13.	Burhwal	813	2·70	2·70	Nil	12·14
14.	Pipraich	813	5·18	4·34	832	N.A.
15.	Babhnan	813	3·42	3·42	Nil	N.A.
16.	Purtabpore	904	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	904	5·02	4·88	141	N.A.
18.	Balrampur	904	3·68	3·22	468	18·36
19.	Baitalpur	914	4·78	3·82	969	19·24
20.	Seorahi	940	6·50	6·50	Nil	20·32
21.	Deoria	965	3·96	3·82	137	19·64
22.	Captainganj	970	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	1,016	3·92	3·92	Nil	31·86
24.	Ghughli	1,016	4·60	N.A.	N.A.	N.A.
25.	Padrauna	1,016	5·72	5·72	Nil	N.A.
26.	Anandnagar	1,016	5·36	5·36	Nil	26·66
27.	Basti	1,025	3·24	3·24	Nil	14·18
28.	Jarwal Road	1,118	N.A.	N.A.	N.A.	N.A.
29.	Biswan	1,219	4·92	4·92	Nil	25·14
30.	Motinagar	1,321	4·86	4·86	Nil	28·76
31.	Nawabganj	1,524	4·18	4·18	Nil	24·68
32.	Ramkola (P)	1,524	5·42	N.A.	N.A.	17·56
33.	Sardarnagar	2,286	12·16	12·16	Nil	71·74
	TOTAL		136·02 (for 30 factories)			

N.A.=Not Available

Source.—Factory Returns

TABLE VII-C

Utilisation of By-Products (Press mud)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Press mud (Average of 5 seasons)			
			Production (000 tonnes)	Sold or utilised as manure (000 tonnes)	Surplus left (tonnes)	Value realised Rs.
1	2	3	4	5	6	7
1.	Khalilabad	559	1·72	1·72	Nil	N.A.
2.	Siswabazur	559	3·44	3·44	Nil	433
3.	Kathkuiyan	610	2·80	2·80	Nil	N.A.
4.	Munderwa	711	1·88	1·88	Nil	N.A.
5.	Bhatni	738	2.56	N.A.	N.A.	N.A.
6.	Lakshmiganj	744	2·72	2·72	Nil	7,384
7.	Gauri Bazar	750	2·68	2·68	Nil	Nil
8.	Walterganj	772	3·38	3·38	Nil	N.A.
9.	Khadda	773	2·54	2·54	Nil	4,162
10.	Ramkola (MK)	791	2·80	2·73	68	9,048
11.	Barabanki	806	3·18	N.A.	N.A.	N.A.
12.	Chhitauni	813	2·72	N.A.	N.A.	N.A.
13.	Burhwal	813	2·28	2·28	Nil	423
14.	Pipraich	813	3·46	3·46	Nil	2,406
15.	Babhnan	813	2·14	2·14	Nil	Nil
16.	Purtabpore*	904	N.A.	N.A.	N.A.	N.A.
17.	Tulsipur	904	2·98	2·98	Nil	Nil
18.	Balrampur	904	2·96	2·96	Nil	598
19.	Baitalpur	914	3·08	2·14	932	1,368
20.	Seorahi	940	4·30	4·30	Nil	Nil
21.	Deoria	965	4·48	4·48	Nil	Nil
22.	Captainganj	970	N.A.	N.A.	N.A.	N.A.
23.	Shahganj	1,016	2·82	2·82	Nil	Nil
24.	Ghughli	1,016	3·52	3·52	Nil	Nil
25.	Padrauna	1,016	3·58	3.58	Nil	4,907
26.	Anandnagar	1,016	3·38	3·38	Nil	1,493
27.	Basti*	1,025	..	..	..	..
28.	Jarwal Road	1,118	N.A.	N.A.	N.A.	N.A.
29.	Biswan	1,219	3·12	3·12	Nil	Nil
30.	Motinagar	1,321	5·10	5·10	Nil	Nil
31.	Nawabganj	1,524	6·42	6·42	Nil	15·22
32.	Ramkola (P)*	1,524	..	..	..	..
33.	Sardarnagar	2,286	7·86	7·86	Nil	Nil
	TOTAL		93·90 (for 28 factories)			

NOTE.—Factories with (*) are carbonation factories whose entire production of press-mud is a waste.

N.A.=Not Available

Source.—Factory Returns.

TABLE VIII-A

Profit After Tax or Loss of Factories During the Ten Years Ending 1961-62

(In lacs of Rs.)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average per year
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Khalilabad	1·02	1·03	1·08	0·51	−0·04	0·70	2·27	2·38	2·33	−0·22	11·06	1·11
2.	Siswabazar	0·72	0·62	−0·61	−0·45	−0·59	1·30	1·03	2·65	0·10	−1·00	3·77	0·38
3.	Kathkuiyan*	..	..	..	..	..	..	..	..	..	..	..	..
4.	Munderwa	−0·42	0·55	−2·28	−2·12	−1·51	−0·90	0·76	2·69	4·51	N.A.	1·28	0·14
5.	Bhatni	..	..	..	..	..	N.A.	−2·90	−3·21	−6·50	−11·62	−24·23	−6·06
6.	Lakshmiganj	−0·14	+1·11	0·89	−1·37	−2·60	−2·29	1·96	−4·50	0·27	−3·98	−10·65	−1·07
7.	Gauri Bazar*	11·66	4·41	5·91	3·23	−11·53	14·14	−7·85	14·28	2·67	−20·38	3·96	0·40
8.	Walterganj**	..	..	..	..	..	..	..	..	..	..	..	..
9.	Khadda	−2·09	−1·33	−6·94	−3·04	−1·67	1·11	3·04	4·44	0·43	N.A.	−6·05	−0·67
10.	Ramkola (MK)	0·13	0·83	0·67	−2·73	−3·55	−3·19	3·67	−0·50	−11·46	−2·05	−18·18	−1·88
11.	Barabanki	−1·93	0·49	3·17	−0·61	1·13	−0·97	N.A.	−1·19	−0·09	N.A.	0·00	0·00
12.	Chhitauni	0·49	4·14	−0·01	−0·90	−2·91	−1·46	0·56	4·11	−3·45	N.A.	0·57	0·06
13.	Burhwal	1·29	0·56	1·62	0·89	1·64	0·05	−0·57	3·34	3·98	−2·40	10·40	1·04
14.	Pipraich	−0·38	4·38	−0·36	N.A.	−2·05	0·36	2·06	1·25	−0·06	−4·24	0·96	0·11
15.	Babhnan	N.A.	N.A.	N.A.	N.A.	N.A.	1·93	2·77	2·74	3·25	3·66	14·35	2·87
16.	Purtabpore	2·05	0·42	2·58	1·70	0·60	−3·01	6·14	4·18	−0·55	−0·57	13·54	1·35
17.	Tulsipur	@	@	@	@	@	@	@	2·40	3·21	−0·29	5·32	1·77
18.	Balrampur	−0·05	4·64	0·74	−0·51	0·71	1·60	1·09	1·90	1·23	1·01	12·36	1·24

TABLE VIII-A (*contd.*)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
19.	Baitalpur	6·36	6·94	1·67	2·70	−0·28	−1·33	2·83	3·42	1·42	−0·87	22·86	2·29
20.	Seorahi	N.A.	2·27	2·33	0·69	1·98	2·39	7·79	5·48	2·61	−9·97	15·57	1·73
21.	Deoria	0·63	0·47	0·23	0·15	−1·16	0·24	2·31	−0·20	−3·50	−6·44	−7·27	−0·73
22.	Captainganj	−24·53	1·18	1·81	0·77	0·36	1·27	2·40	2·88	−3·94	−1·35	−19·15	−1·92
23.	Shahganj	2·48	−1·94	1·78	−0·74	2·57	0·47	5·67	4·37	3·50	1·72	19·88	1·99
24.	Ghughli	4·04	2·91	−0·94	−1·68	0·16	0·68	4·52	1·86	−4·99	−6·09	0·47	0·05
25.	Padrauna*	..	..	..	..	..	..	..	..	..	..	..	..
26.	Anandnagar	1·06	4·25	1·28	2·10	−2·11	4·58	3·57	1·96	3·00	3·59	23·28	2·33
27.	Basti	3·62	9·09	7·03	−1·24	1·95	4·50	2·27	5·26	5·43	2·91	40·82	4·08
28.	Jarwal Road	−4·01	−0·04	2·36	0·06	−3·78	−2·34	−3·58	4·22	2·46	−0·04	−4·69	−0·47
29.	Biswan	1·40	1·67	0·28	0·97	1·03	0·71	0·49	1·62	0·92	0·25	9·34	0·93
30.	Motinagar	N.A.	−4·25	−1·03	−5·54	−0·03	N.A.	−0·93	6·33	7·03	1·41	2·99	0·37
31.	Nawabganj	2·05	0·73	3·96	−0·69	1·16	−0·66	−0·18	−1·85	−0·89	−2·51	1·12	0·11
32.	Ramkola (P)	−5·13	2·17	2·67	0·48	2·84	2·12	8·84	7·58	4·31	1·33	27·21	2·72
33.	Sardarnagar	12·03	12·58	14·97	8·33	1·11	2·39	8·58	7·66	6·13	1·28	75·06	7·51
Average		0·42	1·87	1·40	0·03	−0·52	−0·12	2·25	2·63	0·69	−1·90	0·71	0·71

*Figures of Kathkuiyan, Padrauna and Marhowrah (Bihar) are combined with those of Gauri Bazar.

**Combined with Basti.

@Combined with Balrampur.

N.A.—Not Available.

NOTE :—Determination of income-tax on profits is a very elaborate process and it has not been possible for the Committee to assess the exact position. Fifty per cent of the gross profits has been taken towards income-tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII-B

Profitability of the Factories in Different Capacity Slabs

(Amounts in lacs of Rs.)

Sl. No.	Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available	Profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Profit or loss for the above period	Average profit or loss per year
1	2	3	4	5	6	7	8	9	10	11
(a)	*Factories with capacities between 500 and 749 tonnes*									
1.	Khalilabad	5	+3·60	+0·72	5	+7·46	+1·49	10	+11·06	+1·11
2.	Siswabazar	5	−0·31	−0·06	5	+4·08	+0·82	10	+3·77	+0·38
3.	Munderwa	5	−5·78	−1·16	4	+7·06	+1·77	9	+1·28	+0·14
4.	Bhatni	Factory did not work			4	−24·23	−6.06	4	−24·23	−6·06
5.	Lakshmiganj	5	−2·11	−0·42	5	−8·54	−1·71	10	−10·65	−1·07
No.	of factories showing loss			3			2			2
No.	of factories showing profit			1			3			3
Av.	profit or loss per year per factory			−0·23			−0·62			−0·44
(b)	*Factories with capacities between 750 and 999 tonnes*									
1. 2. 3.	Gauri Bazar Padrauna Kathkuiyan }*	5	+13·68	+2·74	5	−9·72	−1·94	10	+3·96	+0·40
4.	Khadda	5	−15·07	−3·02	4	+9·02	+2·25	9	−6·05	−0·67
5.	Ramkola (MK)	5	−4·65	−0·93	5	−13·53	−2·70	10	−18·18	−1·82
6.	Barabanki	5	+2·25	+0·45	3	−2·25	−0·75	8	0·00	0·00
7.	Chhitauni	5	+0·81	+0·16	4	—0·24	—0·06	9	+0·57	+0·06
8.	Burhwal	5	+6·00	+1·20	5	+4·40	+0·88	10	+10·40	+1·04

TABLE VIII-B (*contd.*)

1	2	3	4	5	6	7	8	9	10	11
9.	Pipraich	4	+1·59	+0·40	5	−0·63	−0·13	9	+0·96	+0·11
10.	Babhnan	..	..	..	5	+14·35	+2·87	5	+14·35	+2·87
11.	Purtabpore	5	+7·35	+1·47	5	+6·19	+1·24	10	+13·54	+1·35
12. 13.	Tulsipur Balrampur	5	+5·53	+1·10	5	+12·15	+2·43	10	+17·68	+1·77
14.	Baitalpur	5	+17·39	+3·48	5	+5·47	+1·09	10	+22·86	+2·29
15.	Seorahi	4	+7·27	+1·82	5	+8·30	+1·66	9	+15·57	+1·73
16.	Deoria	5	+0·32	+0·06	5	−7·59	−1·52	10	−7·27	−0·73
17.	Captainganj	5	−20·41	−4·08	5	+1·26	+0·25	10	−19·15	−1·92
	No. of factories showing loss			3			8			4
	No. of factories showing profit			13			9			13
	Av. profit or loss per year per factory			+0·27			+0·32			+0·29
(c)	*Factories with capacities* 1000 *tonnes and above.*									
1.	Shahganj	5	+4·15	+0·83	5	+15·73	+3·15	10	+19·88	+1·99
2.	Ghughli	5	+4·49	+0·90	5	−4·02	−0·80	10	+0·47	+0·05
3.	Anandnagar	5	+6·58	+1·32	5	+16·70	+3·34	10	+23·28	+2·33
4. 5.	Basti Walterganj	5	+20·45	+4·09	5	+20·37	+4·07	10	+40·82	+4·08
6.	Jarwal Road	5	−5·41	−1·08	5	+0·72	+0·14	10	−4·69	−0·47
7.	Biswan	5	+5·35	+1·07	5	+3·99	+0·80	10	+9·34	+0·93
8.	Motinagar	4	−10·85	−2·71	4	+13·84	+3·46	8	+2·99	+0·37
9.	Nawabganj	5	+7·21	+1·44	5	−6·09	−1·22	10	+1·12	+0·11
10.	Ramkola (P)	5	+3·03	+0·61	5	+24·18	+4·84	10	+27·21	+2·72
11.	Sardarnagar	5	+49·02	+9·80	5	+26·04	+5·21	10	+75·06	+7·51
	No. of factories showing loss			2			2			1
	No. of factories showing profit			9			9			10
	Av. profit or loss per year			+1·56			+2·06			+1·81

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*Also includes Marhowrah factory of Bihar.

TABLE VIII-C

Dividends Paid on Ordinary Shares by Factories Since 1952-53

(Per cent paid up capital)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
1.	Khalilabad	5	5	5	2·5	..	3·1	5	5	5	..
2.	Siswabazar	6	6	..	..	..	6	8	15	..	..
3. 4. 5.	Kathkuiyan Gauri Bazar Padrauna *										
6.	Munderwa	..	3	..	..	..	..	..	10	20	..
7.	Lakshmiganj	..	6	4	..	..	..	..	..	..	*
8. 9.	Walterganj Basti	10	10	10	10	10	10	10	15	15	12
10.	Khadda	..	..	..	..	..	..	..	..	..	*
11.	Ramkola (MK)	..	..	..	..	..	..	..	..	..	..
12.	Barabanki*										
13.	Chhitauni	10	*	—	—	..	..	*	15	*	*
14.	Burhwal	8	4	8	10	13	..	10	10	14	..
15.	Pipraich	*	..	..	..	..	..	..	..	..	..
16.	Babhnan	9	6	5	3	4	4	6	6	7	6
17.	Purtabpore	10	7·5	7·5	7·5	..	..	..	6	..	..
18. 19.	Tulsipur Balrampur	*	15	1·2	..	5	5	8	8	8	4
20.	Baitalpur	*	15	10	10	5	5	9	10	7·5	..
21.	Seorahi	5	12·5	15	6	7·5	10	15	15	5	..
22.	Deoria	10	7·5	5	5	..	..	11·25	3·25	..	..
23.	Captainganj*										
24.	Shahganj	3	..	3	..	6	3·5	12	15	15	10

TABLE VIII-C (*contd.*)

1	2	3	4	5	6	7	8	9	10	11	12
25.	Ghughli	10	10	6	..	..	6	15	15	..	..
26.	Anandnagar*										
27.	Jarwal Road	—	..	..	..	..	..	..	..	..	—
28.	Biswan	—	..	..	..	..	3·5	3·5	4·5	5·5	2
29.	Motinagar } **										
30.	Bhatni }										
31.	Nawabganj	10	6	6	..	..	—	..	..	10	..
32.	Ramkola (P)	25	25	..	12	12	17·5	27·5	27·5	8	6
33.	Sardarnagar	*	*	*	*	*	*	25	33·3	25	4

*Not Available. **Proprietorship . . = Nil

NOTE.—Dividends up to 1957-58 are free of tax and afterwards subject to tax.

APPENDIX I

System of Cane Marketing and Cane Development in U.P.

(i) *Cane Marketing*

Practically the entire cane supplies to the sugar factories in U.P. are arranged by the Co-operative Cane Development Unions formed under the Co-operative Societies Act, 1912. The Cane Commissioner is the Registrar for the Cane Co-operative Societies. The objects of the cane unions are broadly as follows:

(*a*) To arrange for the disposal of the cane of its members at reasonable price and its quick transport to sugar mills and to arrange prompt payment of price.

(*b*) To advance loans to members for productive purposes.

(*c*) To arrange for distribution of manures and fertilisers, good seed, agricultural implements, means of irrigation and development of communications etc.

(*d*) To implement the cane development schemes of the State and Central Governments.

(*e*) To work for general socio-economic uplift of the members.

There are 128 Cane Development Unions in the whole State with a membership of about 19·65 lac cane growers drawn from nearly 39,000 villages, distributed in East and West U.P. as follows:—

	East U.P.	*West U.P.*
No. of cane Unions	67	61
Membership of cane growers	11·91 lac	7·74 lac
No. of villages	21,800	17,200

The income of the cane unions is derived from 50 per cent of the Co-operative Societies commission (the remaining 50 per cent is the share of the Cane Development Councils), interest on loans and commission on sales of fertilisers, implements, etc.

Bonding was previously done on the principle of basic quota worked out on the basis of supplies made by an individual grower during past years but now in order to step up production the growers are allowed to bond up to 90 per cent of their total cane production in the year. The growers enter into an agreement with the unions for supply of cane and the union in its turn enters into a contract with the factory.

Field to field survey of the cane areas in the reserved zones of sugar factories is carried out by the Kamdars of Cane Department and they maintain a record of acreage, varieties and total estimated produce of each cane grower. The first survey is conducted immediately after sowing which finishes by April. The second survey is carried out in July while the third and final survey along with yield estimates is completed in September. The surveys are checked by cane development supervisors, cane development inspectors and higher officers. Bonding is finalized on the basis of final survey and yield estimates. The bonded quantity of the member growers is recorded in the cane supply calendars. Thereafter the calendars are submitted to the Cane Development Unions and the entire cane supply work is thereafter done by the staff of cane unions.

The marking of the calendars is done for the entire season on the principle of equitable purchase of cane from the member growers. When the calendars have been prepared, pass books are issued to the member growers wherein details with regard to their area under sugarcane, cane variety, quantity available and quantity to be supplied in specified periods are entered in advance. In calendaring, preference is given to small growers in matters of early supplies. In general, ratoon crop and early varieties of plant cane are supplied in the early part of season.

The factory places its indent 48 to 72 hours in advance with the Secretary of the Cane Union specifying the quantity of cane to be purchased on a particular date at various centres of supply *viz.* factory gate and road and rail centres. On the basis of these indents, the union issues requisition slips (*purzies*) in the names of the member growers in accordance with the calendars already drawn. The work of the distribution of the cane requisition slip (*purzies*) to the growers is done by runners and *purzi* distributors who are seasonal employees of the cane unions. The staff for watching the weighment of cane at the factory gate as well as out-station purchasing centres is also recruited by the cane unions on seasonal basis and these are known as weighment clerks. At each purchasing centre there are as many weighment clerks of the cane union and the factory as the number of weigh-bridges installed. The clerks authorised for weighment of cane are licensed by the District Magistrate. The correctness of weighment is frequently checked by the Sugarcane Inspectors who are gazetted officers of the State Government. Correctness of weighment is also checked by District Cane Officers/Range Co-ordination Officers, Senior Cane Development Inspectors & Cane Development Inspectors of the Cane Development Department and by the Sub-Divisional Magistrate or Magistrate of the district and non-official honorary Cane Inspectors.

The factory pays the cane price to the cane unions which maintains staff for disbursement of cane price at the factory gate and at the out-station centres. The details with regard to quantities of cane supplied and payments received are recorded on the growers pass books. Necessary deductions in respect of advances previously made to the growers for seed, manures etc., are made from the cane price payable to growers. The union maintains a ledger in respect of every member. The accounts of cane price, fertiliser etc. are audited by the auditors of the Cane Department. The audit is of a concurrent nature. The responsibility of audit of cane unions is that of the Cane Commissioner.

The general activities of the cane unions and their day-to-day working are controlled by the respective Board of Directors which is their Chief Executive Body. In general, there is an elected Chairman of the Board and elected directors. There is also a representative of the concerned sugar factory on the Board of Directors. The District Cane Officer is an *ex-officio* member of the Board and the Cane Development Inspector (M) is generally the Honorary Secretary. The Board of Directors meets once a month to decide the general policy of the working of the cane unions in respect of the marketing of cane and to review the other activities of the Union. The Board is an autonomous body functioning under its own rules and bye-laws. All the cane development unions are affiliated to the U.P. Co-operative Cane Unions Federation Ltd., Lucknow.

In each factory area cane development staff is posted according to the size of the area, intensity of cane acreages and cane supply to the factory. Generally in each factory area the following staff is posted:

1. Cane Development Inspector (Marketing)	1
2. Cane Development Inspector (Dev.)	1
3. Cane Development Inspector (Intensive Cane Development)	1
4. Supervisors	10 to 12
5. Kamdars	30 to 35

Where the total area is vast and far-flung more staff is posted. With the introduction of Intensive Development Scheme in the State one Senior Cane Development Inspector has been provided for a group of factories. He is essentially posted for development work but he also co-ordinates and supervises the marketing work. The field staff of the department consisting of Senior Cane Development Inspectors, Cane Development Inspectors, Supervisors and Kamdars are integrated both for development and marketing work, emphasis being given to the development side.

(*ii*) *Cane Development*

Cane development is carried out by the field staff of the department consisting of Kamdars, Supervisors, Cane Development Inspectors and other senior officers. The work of development is mainly directed to improve the acre-yield of cane and to provide the grower with necessary facilities.

The grower is supplied with fertilisers, healthy disease-free cane seed of approved varieties, oil cakes, green manure seeds and insecticides to grow a healthy crop. Irrigation being the chief factor for good cultivation is given top priority and hence loans and subsidies are given for developing minor irrigation works.

All the work of development is done under the guidance and supervision of the Cane Development Council. There is one Cane Development Council for the area of each sugar factory. The Cane Development Council consists of nine members besides the Chairman who are nominated by the Cane Commissioner as follows:—

(*a*) A Chairman nominated with the approval of the State Government.

(*b*) Two representatives of Cane Growers Co-operative Society, two representatives of the sugar factory and one representative of *gur* and *khandsari* interest.

(*c*) District Planning Officer.

(*d*) One other officer (Cane Protection Inspector) of the district or Senior Cane Development Inspector.

(*e*) District Cane Officer as Member-Secretary.

(*f*) One Joint Secretary (Cane Development Inspector).

The Council considers and approves the programme of development for the zone and prepares its budget. Funds of the council are derived from the commission @. 6.5 P. per quintal (50 per cent of the total commission) on cane supplied to the factories, grant by the Government for various items and contributions by the Cane Unions, sugar factories and the cane growers.

Main emphasis of the council is on providing better irrigation facilities and generally more than 50 per cent of its funds are spent over this item in the form of subsidies on tubewells, boring of wells, persian wheels and other water lifting appliances, and *pucca* channels etc., cane seed, fertilisers and insecticides are supplied by the department to the extent of the demand by the growers. The field staff obtains indents for cane seed of approved varieties, fertilisers, cakes, implements and insecticides etc., from the growers. They also obtain loan applications for minor irrigation works. These indents and loan applications are approved at the village meetings. The growers are then given all their requirements on credit.

For supplying the growers with good healthy cane seed, seed nurseries are maintained in the fields of progressive cane growers who have good irrigation facilities, etc. Supervision of these nurseries is done by the staff from the stage of preparation of seed bed to harvesting and all improved practices of agriculture are followed to raise a good crop. Proper record of all the operations is maintained by the supervisors. After preparing a sowing programme for the zone and its approval by the Cane Development Council, seed distribution is done in accordance with the same. The supervisor issues a requisition slip to the purchaser of the seed for the supply of seed. Along with cane seed every purchaser is bound to purchase insecticides for hastening up germination and control of pests, to give the crop a good start. Uptil now area under nurseries was kept so as to provide seed for 10 per cent of the plant cane but now it has been doubled to 20 per cent. This will mean replacement of unapproved varieties over a period of about 5 years.

For fertilisers, green manure seed, implements and other requirements the cane growers are issued slips on the stores of the Cane Union from where they meet their requirements.

Targets are fixed for each and every item of development work for each member of the staff and progress is watched by the officers and the Council. Half field demonstrations are laid on the fields of the cane growers to convince the growers of the superiority of better methods of cultivation, improved and recommended varieties, better fertilisers etc.

To control and prevent the incidence of pests and diseases preventive measures are taken. Whenever any outbreak of disease or pest takes place campaigns are organised by the plant protection wing of the Cane Department with the help of othor field staff. Each factory has been provided with one Assistant Cane Protection Inspector who supervises and certifies the cane seed nurseries and also organises plant protection work in the zone and reports incidence etc. His work is supervised by the Cane Protection Inspector posted at district level. At State level two Cane Protection Officers, one for diseases and the other for the pests, supervise the work. They also scrutinize the indents and arrange the supply of equipment and insecticides etc.

To consider the problems of sugar industry and cane development in the State, Government of U.P. appointed a High Power Committee in 1962. On the recommendation of this Committee, Intensive Cane Development Scheme was started in 1963-64 in blocks of 4,000 acres around 25 sugar factories. Later on the State Government approved the scheme for all the factories where the growers and factories were willing to contribute their share amounts to one-third of the total cost. Sixty-six sugar factories have joined the scheme. Under this scheme it is proposed to concentrate the development activities in an area of about 4,000 acres under cane with the object of increasing the yield per acre of sugarcane by 100 mds. over the existing yield rates in the respective blocks in a period of three years ending 1965-66. A sum of about Rs. 1,32,000 including cost of staff will be spent on subsidies alone mainly on minor irrigation. Provision of subsidy on manure godowns to make the fertilizers available within easy reach has also been made. Subsidies have also been provided for cakes, *sanai* seed, insecticides and on culverts etc. More intensive work on all these items of development is being done in these blocks and targets have been fixed on the basis of availability of funds and local conditions, top priority being given to minor irrigation work.

The extent of cane development done in Uttar Pradesh by the Cane Development Department from 1951-52 to 1961-62 is given in the following table:—

The extent of cane development done in U.P. by the Cane Development Department from 1951-52 *to* 1961-62.

Items	Unit	Total from 1951-52 to 1960-61		During 1961-62		To-date position in 1962 (whole U.P.)
		East U.P.	West U.P.	East U.P.	West U.P.	
1	2	3	4	5	6	7
1. *Irrigation*						
(*a*) Wells sunk .	Nos.	6,623	11,581	810	1,977	20,991
(*b*) Wells bored	,,	2,379	9,686	375	1,791	14,231
(*c*) Persian wheels	,,	1,561	9,107	365	1,715	12,748
(*d*) Pumping plants	,,	549	1,082	88	183	1,902
(*e*) Tubewells .	,,	1,013	2,487	245	792	4,537
2. *Supply of Manures & Fertilisers.*						
(*a*) Chemical fertiliser . .	(Tonnes)	81,093	2,16,478	10,672	29,956	3,38,199
(*b*) Oil cakes .	,,	20,829	37,590	1,412	2,548	62,379
(*c*) Mixture .	,,	11,752	20,723	436	1,158	34,069
(*d*) Green manure	,,	2,495	5,178	253	808	8,734
3. *Seed Distribution*						
(*a*) Seed nurseries established .	(Hectares)	14,314	26,343	1,513	3,784	45,954
(*b*) Cane seed distribution .	(Lac tonnes)	6·178	10·580	0·379	1·005	18·142
4. *Compost Drive*						
(*a*) Preparation of village compost	(Lac tonnes)	8·899	18·440	1·301	3·000	31·640
(*b*) Preparation of factory yard compost .	,,	2·410	0·830	0·176	0·084	3·500
5. *Demonstration*						
(*a*) Half field demonstration	Nos.	43,750	70,621	4,854	9,122	1,28,347
(*b*) Implement demonstration	,,	19,046	65,202	142	315	84,705
6. *Cane Protection Service*						
(*a*) Area attacked	(Hectares)	56,015	3,01,984	3,408	43,161	4,04,568
(*b*) Area controlled	,,	51,618	2,20,873	3,282	33,015	3,08,788

1	2	3	4	5	6	7
7. *Road Construction Scheme*						
(*a*) Under factory development plan . .	Km.	N.A.	N.A.	N.A.	N.A.	N.A.
b) Under Union/ Council plan	„	2,275	4,690	467	525	7,957
(*c*) Repairs of roads	„	13,618	13,132	1,239	1,145	29,134
(*d*) Construction of bridges & culverts . .	Nos.	1,464	4,967	563	664	7,658
Repairs of bridges and culverts	Nos.	355	815	67	49	1,286
8. *Distribution of Implements* . .	„	42,898	72,662	4,639	5,021	1,25,220

It will be seen that while considerable amount of work has been done it has still not been adequate to meet the colossal requirements of cane cultivation.

The amount of cane cess/purchase tax realised by the State Government and directly spent on cane development activities throughout the State was as follow:

Year	Tax collected (lacs of Rs.)	Total amount spent (lacs of Rs.)
1955-56	272·25	46·80
1956-57	518·96	73·94
1957-58	3,588·27	111·03
1958-59	552·17	112·07
1959-60	459·03	127·30
1960-61	426·23	115·11
1961-62	348·99	116·33
1962-63	659·72	121·70

सत्यमेव जयते

Besides the above, some funds are spent out of the grants of other Government Departments such as Irrigation Department, Agricultural Department and the P.W.D.

BIHAR

1. GENERAL ASPECTS

The river Ganges divides Bihar into two portions *viz.*, North Bihar and South Bihar. The North Bihar region in which 24 sugar factories are situated covers the four districts of Champaran, Darbhanga, Muzaffarpur and Saran. South Bihar has four factories in the districts of Patna, Shahabad and Gaya. The State of Bihar broadly lies between longitude 83° and 88° (East) and latitude 22° and 28° (North). The area is thus in the subtropical belt. The rainfall in Bihar is on an average 114 cms. confined within the months of June and September with maximum precipitation in July and August. There is also 4 to 5 cms. of winter rainfall in December to February period. Climate is moderate, temperatures reaching a maximum of 45° C in summer and minimum of 7° C in winter.

Relative humidity during the year varies between 70 (8·30 A.M.) and 55 (5·30 P.M.). The soil throughout the belt of the Indo-Gangetic Plain is fertile being generally of alluvial type. Soil conditions in South Bihar are, however, different from those of North Bihar. Certain tracts called *Terai* are below the mountainous ranges where the water table is high. Some part of the North Bihar region is susceptible to frequent floods and some of the factories *viz.*, Sidhwalia, Pachrukhi, Marhowrah, Majhaulia, Garaul, Righa, Ryam and Hasanpur suffer from water logging in their areas due to existence of depression called *chaurs*. Drought also occurs sometimes.

1.2 Density of population, size of holdings, agricultural and industrial employment and economic condition of the people

The Bihar region is thickly populated and the holdings are small. Population density in the whole of Bihar is 267 per sq km., whereas in the sugar producing districts it is as follows :

	Per sq. km.
Champaran	327
Darbhanga	512
Muzaffarpur	526
Saran	518
Patna	525
Shahabad	282
Gaya	295

The percentage of rural to total population is 91, of workers to total population 41, and of agricultural workers to the total workers 36. Industrial employment per lac of population is only five thousand. In the Champaran District which has a concentration of sugar factories, the percentage of holdings up to one acre is 80; 1-3 acres 12; 3-5 acres 5; 5-10 acres 2; and above 10 acres it is only 1·0 per cent. The sugar industry occupies an important place in the industrial map of Bihar. This industry is second to the Iron and Steel industry in respect of production worth as would be seen from the following table :—

Sugar Industry & Other Industries in Bihar

Industry	No. of factories	Capital invested in lac Rs.	No. of workers employed	Total salaries & wages in lac Rs.	Total value of products in lac Rs.
I. *Sugar Industry* . . .	30	1454·50	27,766	233·70	2198·95
II. *Other Industries*					
1. Distilleries and products .	7	37·84	379	4·40	40·00
2. Vegetable oil . . .	52	93·14	1,514	10·23	219·09
3. Edible oil . . .	10	326·60	2,228	40·54	1457·64
4. Cement	7	1275·90	6,044	99·64	1936·62
5. Glass ware . . .	4	246·53	2,835	32·68	161·44
6. Ceramics . . .	14	266·50	7,368	136·14	364·13
7. Cotton Textiles . .	27	625·11	11,576	119·20	615·88
8. Woollen Textiles . .	31	402·15	627	85·74	720·30
9. Jute Textiles . . .	3	167·46	7,957	85·54	234·96
10. Chemicals . . .	13	2558·42	10,176	183·25	1201·41
11. Iron & Steel . . .	5	2728·32	36,968	1202·89	5548·76
12. General Engineering .	87	666·97	11,203	178·56	N.A.
TOTAL (for other industries) .	260	9394·94	98,875	2178·45	12500·23

Agricultural output is Rs. 300 per acre only. Industrial output is of the value of Rs. 38 per capita.

The sugar industry in Bihar sustains about 5 lac cultivators and nearly 24 thousand factory workers besides a large number of persons carrying on small trades in the vicinity of the factories. Assuming an average family of 5 persons the sugar industry in the region provides employment to about 35 lac people. The sugar industry pays about Rs. 12 crores annually to the cane growers of the region and the Central and State Governments derive about Rs. 8 crores as excise duty and Rs. 1·75 crores as cane cess respectively. It therefore appears necessary to develop this region so as to bring up the general economic level and promote the well being of a large number of cultivators. The only industry which could be developed in this region is the sugar industry which came up there due to large scale sugarcane plantations after the disappearance of indigo plantations. There is considerable potential for further development of sugarcane cultivation.

1·3 Importance of sugarcane

Sugarcane has been grown in Bihar for centuries as this crop withstands the hazards of wheather and natural calamities to which this region is prone. It is also one of the chief cash crops of the region.

The area under sugarcane in the North and South Bihar regions, has in the last four years been as follows :

	1959-60	1960-61	1961-62	1962-63
	(In thousand acres)			
North Bihar	376	437	466·6	322·7
South Bihar	..	..	36·7	33·4
TOTAL for Bihar .			513·3	356·1

It has thus varied from about 3·56 lac acres to 5·13 lac acres. It forms roughly 8·6 per cent of the total area under cane in the whole of India.

1·4 Establishment and growth of sugar Industry in Bihar

Ready availability of cane and cheap labour have been responsible for the establishment of the sugar industry in this region. Even prior to grant of protection to the sugar industry in 1932, there were 12 sugar factories working in this State. The protection gave a further fillip to the industry and within a few years after 1932 the total number of factories which came to be established in the region was 30. The expansion was rather rapid and resulted in putting up a large number of small sized units near to one another. The number of sugar factories working before and after 1932 is given below :

सत्यमेव जयते

Year	No. of working factories	
1931-32	12	
1932-33	23	
1933-34	30	
1934-35	30	
1935-36 to 1940-41	31	
1941-42 to 1943-44	30	Semapur factory in Muzaffarpur shifted to Dabra (Madhya Pradesh)
1944-45	29	(Japaha factory in Purnea shifted to Ranbirsinghpura in Kashmir and subsequently to Dhuri)
1951-52	28	Indian Siwan stopped working.
1952-53 to 1962-63	28	

It will be seen that 3 factories have not been working since 1951-52. Two of them were shifted to other locations in India and one is lying idle. Thus for more than a decade 28 factories have been working in the State. While several new factories have come up in other parts of India during the last few years, no new factory has been set up in Bihar.

1.5 Distribution of sugar factories

The distribution of the 28 sugar factories working at present in the various districts and their existing daily cane crushing capacities are as follows:

Sl. No.	Name of district	Name of factory	Existing daily cane crushing capacity (tonnes)
1.	CHAMPARAN	1. Bagaha	1,016
		2. Chanpatia	884
		3. Sugauli	914
		4. Barrahchakia	947
		5. Motihari	1,016
		6. Lauriya	1,189
		7. Narkatiaganj	1,219
		8. Harinagar	1,524
2.	DARBHANGA	1. Ryam	791
		2. Samastipur	808
		3. Sakri	813
		4. Hasanpur	1,219
		5. Lohat	1,321
3.	MUZAFFARPUR	1. Garaul	1,016
		2. Righa	1,219
		3. Motipur	1,219
4.	SARAN	1. Sidhwalia	660
		2. Sasamusa	1,016
		3. Harkhua	813
		4. Siwan	914
		5. Marhowrah	945
		6. Pachrukhi	1,128
		7. Hathua	1,524
5.	PATNA	1. Bihta	1,371
6.	SHAHABAD	1. Dalmianagar	1,829
7.	GAYA	1. Gураru	864
		2. Warisaliganj	711

सत्यमेव जयते

TABLE II-Civ

Boiling House Equipment

Sl. No.	Name of Factory	Capacity tonnes/ day)	Centrifugals			
			Ordinary		High speed	
			No.	Size	No.	Size
1.	Bhupalsagar	508	24 10	30"×18" 42"×20"	Nil	—
2.	Sriganganagar	610	30 2	30"×18" 36"×18"	Nil	—

Source : Factory Returns.

TABLE III-Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Bhupalsagar . . .	11·93	12·58	13·30	13·19
2.	Sriganganagar . . .	11·26	11·52	11·09	11·30

Source—Factory Returns.

TABLE III-Aii

Cane Quality (Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Bhupalsagar	12·57	13·24	13·22	13·09
2.	Sriganganagar . . .	14·31	15·45	15·50	15·06

Source—Factory Returns.

TABLE III-Aiii

Cane Quality (Primary juice purity)

Sl. No.	Name of Factory	Primary juice purity			
		1959-60	1960-61	1961-62	1962-63
1.	Bhupalsagar	79·33	79·47	80·85	81·87
S.	Sriganganagar . . .	76·32	76·85	77·02	78·87

Source—Factory Returns.

TABLE III-Bi

Time account (Duration of season)

Sl. No.	Name of Factory	Duration of season (days)			
		1959-60	1960-61	1961-62	1962-63
1.	Bhupalsagar	70	155	121	101
2.	Sriganganagar	151	138	114	95

Source—Factory returns.

TABLE III-Bii

Time account (Time loss)

Sl. No.	Name of Factory	Time lost per cent available			
		1959-60	1960-61	1961-62	1962-63
1.	Bhupalsagar	14·61	16·77	20·07	14·81
2.	Sriganganagar	15·39	16·66	12·45	13·68

Source—Factory Returns.

TABLE III-Ci

Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Bhupalsagar	9·19	9·53	10·27	10·30
2.	Sriganganagar	8·50	8·82	8·46	8·64

Source—Factory Returns.

TABLE III-Cii

Technical Efficiency (Total losses)

Sl. No.	Name of Factory	Total losses per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Bhupalsagar	2·76	3·07	3·05	2·91
2.	Sriganganagar	2·78	2·72	2·65	2·68

Source—Factory Returns.

सत्यमेव जयते

TABLE III-Ciii

Technical Efficiency (Reduced overall extraction)

No.	Name of Factory	Reduced overall extraction			
		1959-60	1960-61	1961-62	1962-63
1.	**Bhupalsagar**	81·85	81·38	81·68	81·82
2.	**Sriganganagar**	83·74	85·07	84·51	83·83

Source—Factory Returns.

TABLE III-Di

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	**Bhupalsagar**	36·75	34·56	33·47	33·97
2.	**Sriganganagar**	33·35	40·32	37·48	34·12

Source—Factory Returns.

TABLE III-Dii

Extra Fuel Consumption

No.	Name of Factory	Extra fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	**Bhupalsagar**	9·38	5·29	4·15	5·59
2.	**Sriganganagar**	1·86	6·97	3·46	1·49

Source—Factory Returns.

सत्यमेव जयते

TABLE IV-A

Existing Strength of Labour and Labour Considered Surplus at Present and After Modernisation

(Rajasthan)

Sl. No.	Name of Factory	Capacity (tonnes/day)	Total labour employed	Labour surplus now		Labour surplus after expansion/modernisation	
				Skilled & semi-skilled	Unskilled	Skilled & semi-skilled	Unskilled
1.	**Bhupalsagar** .	508	717	Nil	Nil	52	157
2.	**Sriganganagar** .	610	1089	Nil	Nil	Approx. ,,	15% skilled 30% semi-skilled 50% un-skilled

Source—Factory Returns.

TABLE IV-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity tonnes/ day)	Man days/tonne of sugar			
			1959-60	1960-61	1961-62	1962-63
1.	**Bhupalsagar** . . .	508	12·80	11·18	10·83	9·79
2.	**Sriganganagar** . . .	610	19·66	18·36	16·47	16·37

Source—Factory Return

TABLE V-A

Utilisation of By-Products (bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (average of 5 seasons)			
			Production ('000 tonnes)	Used as fuel ('000 tonnes)	Saved & sold (tonnes)	Value realised Rs.
1.	**Bhupalsagar** . . .	508	18·91	18·91	Nil	Nil
2.	**Sriganganagar** . .	610	26·30	26·30	Nil	Nil
	. TOTAL		45·21			

Source—Factory Returns.

सत्यमेव जयते

TABLE V-B

Utilisation of By-Products (Molasses)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Molasses (average of 5 seasons)			
			Production ('000 tonnes)	Utilised for distillery and trade ('000 tonnes)	Surplus left (tonnes)	Value realised ('000 Rs.)
1.	**Bhupalsagar** . . .	508	2·89	2·89	Nil	45·94
2.	**Sriganganagar** . .	610	3·68	3·68	Nil	N.A.
	TOTAL		6·57	.		

N.A.—Not Available.

Source—Factory Returns.

TABLE V-C

Utilisation of By-Products (Press-mud)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Press-mud (average of 5 seasons)			
			Production ('000 tonnes)	Sold or utilised as manure ('000 tonnes)	Surplus left (tonnes)	Value realised (Rs.)
1.	**Bhupalsagar** . . .	508	1·48	1·48	Nil	N.A.
2.	Sriganganagar . .	610	2·23	2·23	Nil	N.A.
	TOTAL		3·71			

N.A.—Not available.

Source —Factory Returns.

सत्यमेव जयते

TABLE VI-A

Profits After Tax or Loss of the Factories During the Ten Years Ending 1961-62

(In lacs of Rs.)

Sl. No.	Name of the factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Bhupalsagar .	(—)3·47	1·28	2·40	2·05	3·95	3·35	1·47	(—)5·72	1·33	3·25	9·89	0·99
2.	Sriganganagar .	0·27	(—)1·27	0·75	0·63	3·02	4·31	1·40	2·97	4·55	0·72	17·35	1·74
	Average .	(—)1·60	0·01	1·58	1·34	3·48	3·83	1·43	(—)1·38	2·94	1·98	1·36	1·36

Note.—Determination of income-tax on profits is a very elaborate process and it has not been possible for the Committee to assess the exact position. Fifty per cent of the gross profits has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VI-B

Profitability of the Factories in Different Capacity Slabs

(In lacs of Rs.)

Sl. No.	Name of the factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year
1	2	3	4	5	6	7	8	9	10	11
	Factories with capacities between 500 and 749 tonnes									
1.	Bhupalsagar	5	6·21	1·24	5	3·68	0·74	10	9·89	0·99
2.	Ganganagar	5	3·40	0·68	5	13·95	2·79	10	17·35	1·74
	No. of factories showing profit . .	2			2			2		
	Average profit per year per factory .			0·96			1·76			1·36

TABLE VI-C

Dividends Paid on Ordinary Shares by the Factories Since 1952-53

(Per cent paid up capital)

Sl. No.	Name of the factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
1.	Bhupalsagar	Nil	Nil	10·00	10·00	12·50	12·00	7·50*	Nil	Nil	10.00*
2.	Sriganganagar	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil

*Subject to income tax.

GUJARAT

1. GENERAL ASPECTS

1.1 The Gujarat State consists of 17 districts and is situated on the west coast of India between 20·1° and 24·7° north latitude and 68·4° and 74·4° east longitude. There are three working sugar factories in the State at present all, in the cooperative sector. They are Bardoli in Surat District, Gandevi in Bulsar District and Kodinar in Amreli District.

The annual rainfall in various regions of the State ranges between 51-152 cms. with maximum concentration in the months of July and August. The range of minimum and maximum temperatures is about 8°C (In January-February) and 45°C (in April-May) respectively. On the basis of average rainfall, the main regional features can be summarised as follows:

South Gujarat where the rainfall varies between 76—152 cms. the annual range in temperature is wide. Two factories *viz.* Gandevi and Bardoli are situated in South Gujarat.

North Gujarat where the rainfall varies between 51—102 cms; the area has lower winter temperatures.

Saurashtra which is dry, the rainfall being less than 64 cms. Kodinar factory is situated in this region.

The Gujarat soils are mostly alluvial in nature, varying from sandy loam to clay in texture. They are fertile and retentivity of soil moisture in them is good.

1.2 Area, density of population, agricultural and industrial employment and economic condition of people.

The total area of the State is 1,86,880 sq. kilometres and the average density of population is 110 per sq. kilometre. Percentage of workers to total population is about 41·0, of agricultural workers to total workers 14·8, of industrial workers to total population 5·8 and of workers in sugar industry to the industrial workers 0·17. Per capita income for the year 1960-61 has been estimated at Rs. 393·39 at current prices.

1.3 Importance of sugarcane crop and sugar industry

Though the existing sugar industry came to be established in this region only after 1955, sugarcane has been grown here for long. This crop more than any other, withstands the hazards of weather and natural calamities. It is also one of the chief cash crops and occupies an important place in the agricultural economy of the State.

Total area under cane in the State is 54,800 acres, the area under cane in sugar factory zones being about 14,000 acres. Various other important crops of the State and area under them is given below:

	(in'000 acres)
Groundnut	4609
Cotton	4033
Bajari	3084

	(in'000 acres)
Jowar	340
Rice	141
Wheat	97
Tur	21

The Sugar industry sustains about 10,000 cultivators and nearly 2,000 factory workers besides a number of persons carrying on small trades in the vicinity of the factories. The sugar industry pays about Rs. 2·1 crores annually to the cane growers of the State and the Central Government derive an income of about Rs. 1·2 crores as Exise Duty. Thus it occupies an important position in the economy of the State.

1.4 Establishment and growth of the sugar industry

A factory with a capacity of 400/450 tons per day was established in 1946 at Dhola in the then Bhavnagar State of Saurashtra. But it had to stop after crushing for two seasons due to failing cane supplies on account of wide disparity in the price of *gur* and that of sugar prevailing there at that time. This plant is lying idle since then.

From 1949 to 1955 there was no sugar factory working in this part of the country. In 1956 when the State of Saurashtra was merged into State of Bombay, one sugar factory started working in this region. The present State of Gujarat came into being in 1960 on bifurcation of the bilingual State of Bombay. The number of sugar factories working in this region in the various years since 1956-57 had been as follows:

Year	No. of working factories
1956-57 to 1957-58	1
1958-59 to 1960-61	2
1961-62 to 1962-63	3

It will be seen from the above that number of factories has gone on increasing and in the year 1962-63 there were three working sugar factories.

1.5 District-wise distribution of sugar factories

The distribution of the three factories working at present in the various districts and their existing daily cane crushing capacities are as follows:

Name of the District	Name of the Factory	Existing daily cane crushing capacity (tonnes) 1963-64 season
1. Amreli	Kodinar	1,016
2. Bulsar	Gandevi	356 (licensed capacity is 1016 tonnes).
3. Surat	Bardoli	813

1.6 Sugarcane development and research

At the State level there is no set-up for looking after the cane development work exclusively. The cane development work is carried out by the factories themselves and they provide crop loan to their members in kind *viz.* fertilizers, cane seed, insecticides etc.

There is no cess or purchase tax on cane in the Gujarat State at present.

As regards sugarcane research, an independent Sugarcane Research Station has been started at Bardoli on the lines of Padegaon Research Station in Maharashtra. There is also a Regional Research Station at Kodinar and another is proposed to be opened at Gandevi.

2. TECHNICAL ASPECTS

2.1 Area under sugarcane and yield per acre

There are no clearly defined permanent reserved zones attached to the factories in Gujarat. All the factories being co-operatives, they have got registered member-growers in the area round about the factory known as area of operation of the factory. Major portion of the cane supplies to the factories are made by these member-growers.

The position with respect to the area under cane in the factory zones is given in Table I-A and estimated yield per acre in Table I-B.

It will be seen from the figures given in these tables that (*i*) the area under cane for three factory zones was 12,400 acres in 1961-62 and 13,000 acres in 1962-63, it has varied very little in Gandevi and Bardoli factory zones but increased by about 1000 acres in 1962-63 in Kodinar factory zone and (*ii*) the yield per acre ranged between 20—22 tonnes for the whole State and 21—25 tonnes in development zones.

2.2 Cane supplies to sugar mills

The percentage of cane utilised for white sugar manufacture is given in Table I-C, the actual supplies made to sugar factories in Table I-D and the percentage of cane supplied at the gate, road and rail centres in Table I-E.

It will be seen from Table I-C that except the supplies made to Gandevi factory in its first season and to Kodinar in 1959-60, average supplies of cane to sugar mills have generally varied from 77 per cent to 95 per cent of the total cane produced in their zones. In order to prevent the diversion of cane to *gur* and *khandsari*, the factories impose a fine of Rs. 1,000/- per acre on those growers who divert their cane and with this are able to have an effective control on cane supplies.

Table I-D shows that actual cane supplies to every factory have gone on increasing every year. Total supplies have ranged between 87·42 thousand tonnes (for two factories) in 1959-60 to 352·31 thousand tonnes in 1962-63.

It will be seen from Table I-E that in case of all the factories cent per cent cane is supplied at the factory gate which is a happy position and ensures fresher supplies at minimum transport cost. The number of growers supplying cane to the three factories is about 10,000.

2.3 Irrigation, application of manures and fertilizers and supply of cane seed

The position with regard to irrigation, supply of manures and fertilizers and supply of cane seed is given in Tables II-A, II-B and II-C respectively.

It will be seen from Table II-A that entire cane areas of all the three factories are irrigated. Gandevi factory has, however, got the problem that its area is not supplied with water from Kakarpara Canal in summer months.

The Committee was informed during the discussions with the factory representatives and the concerned officials of the State that in Gujarat there are 20 major and minor schemes of irrigation at present. Two major irrigation projects *viz.*, Kakarpara and Shatranji which have recently come up have got about 10,000 and 9,000 acres of cane respectively under their command. Third major project *viz.*, Ukai which is expected to be completed by 1971 will have about 25 to 30,000 acres of cane crop under its command. Besides this, the rainfall in the factory areas is fairly good, wells have enough water and pumping-sets are being used. The Surat District is under a package programme and is being saturated in respect of all requirements of irrigation.

Table II-B shows the requirement of manures and fertilizers for the factory areas including possible extension of areas in the near future. No specific problems regarding the availability of manures and fertilizers or their distribution were brought to the notice of the Committee and it seems that the requirements of fertilizers are being met or can be met fully.

Table II-C shows the requirement of cane seed. It will be seen that actual yearly requirement of cane seed is 30,900 tonnes. These requirements are being met by factory farms and cultivators themselves.

2.4 Means of communication

Table II-D shows the position with regard to means of communication at present available and still needed in the various factory zones as communicated by the factories.

It will be seen that at present about 330 kms. of *pucca* roads exist in the factory areas. Minimum additional requirement of the factory zones is 320 kms. Requirements in respect of bridges and culverts have not been communicated.

It was brought to the notice of the Committee that in order to develop communications in sugar mills areas in Gujarat, the State Government had sanctioned a scheme involving Rs. 87 lacs under the Central Government Contributory Road Scheme. This amount of Rs. 87 lacs is to be raised by 1/3rd contribution by the State Government, 1/3rd by the Central Government and 1/3rd by the factories.

2.5 Duration of season, cane crushed, sugar made and average recovery

The position with respect to average duration of season, cane crushed, sugar produced and average recovery recorded during the preceding seven years is as follows :

Year	Average duration (22 hrs)	Cane crushed (000 tonnes)	Sugar made (000 tonnes)	Average recovery per cent cane
1956-57 . . .	44*	25·48	1·29	5·05
1957-58 . . .	74	44·11	4·10	9·30
1958-59 . . .	50**	58·89	5·44	9·23
1959-60 . . .	61	87·85	9·41	10·71
1960-61 . . .	142	259·41	27·87	10·75
1961-62 . . .	118***	310·63	33·86	10·90
1962-63 . . .	154	352·88	36·89	10·45

*Trial season of Bardoli factory.

**Includes Kodinar Factory which had a trial run of eight days only. Excluding it, the average duration was 91 days.

***Includes Gandevi factory which had a trial run of 32 days. Excluding it, the average duration was 161 days.

It will be seen that during the last seven years, the average duration (22 hours) has varied from 44 days in 1956-57 to 154 days in 1962-63. The maximum recovery has been 10·90 in 1961-62.

2.6 Sugar production

The position with regard to the number of working factories, their registered capacity, production of sugar in tonnes and sugar produced per 100 tonnes of registered capacity from 1956-57 to 1962-63 is shown below :

Year	No. of working factories	Total registered capacity (cane/day in tonnes)	Production of sugar in tonnes	Production of sugar per 100 tonnes registered capacity (tonnes)
1	2	3	4	5
1956-57	1	813	1,287	158·3
1957-58 . . .	1	813	4,100	504·3
1958-59	2	1,829	5,436	297·2
1959-60	2	1,829	9,406	514·3
1960-61	2	1,829	27,874	1,524·0
1961-62	3	2,845	33,861	1,190·2
1962-63	3	2,845	36,892	1,296·7

The maximum production by three factories has been 36,892 tonnes in 1962-63. Production per 100 tonnes registered capacity was very low in 1956-57 and 1958-59 because 1956-57 was the trial season of Bardoli factory and 1958-59 of Kodinar factory. The maximum production per 100 tonnes of registered capacity can be taken as 1100—1300 tonnes.

The consumption of sugar in Gujarat was about 2,17,000 tonnes in 1962-63. The State is thus deficit by about 1,80,000 tonnes over and above the production potential of the existing three factories.

2.7 The age of the factory plants, their capacities and present condition of equipment

The following table gives the age of the various plants and their capacities :

Name of Factory	Year of establishment	Age in 1963 (yrs.)	Original capacity in tonnes/day	Existing daily cane crushing capacity in tonnes 1963-64 season	Actual maximum crushing rate/24 hrs. operation attained in 1961-62 or 1962-63 (tonnes)
Gandevi* .	N.A.	N.A.	N.A.	356**	408
Bardoli . .	1956	7	813	813	917
Kodinar . .	1958	5	1,016	1,016	1,166

*Shifted old plant from Hamira and started working at Gandevi in the season 1961-62.

**Licensed capacity is 1,016 tonnes.

It will be seen from the above that except Gandevi, the remaining two factories have new plants.

Table III-A gives important details of the milling plants. It will be seen that all the plants have got two sets of knives which are adequately powered, the mills of Bardoli and Kodinar factories are driven by steam turbines and that of Gandevi factory by one steam engine and the power in the turbines/engine is quite adequate.

Table III-B will show that Gandevi's plant is fully steam driven and those of Bardoli and Kodinar are semi-electric. Boilers in the latter two factories are of 300 p.s.i.g. and in the former of 200 p.s.i.g. working pressure. All the factories have got economizers and all except Gandevi have the superheaters.

As regards the equipment in the boiling house, Tables III- Ci, ii, iii and iv will show that Gandevi factory still has juice measurement whereas the other two factories have automatic weighing scales, no factory is having vapour line juice heater and only Bardoli factory has got a pre-heater. In Bardoli and Kodinar bled vapours are utilised for juice heating. Sulphitation tanks in Gandevi and Kodinar factories are of batch type, settling is continuous in all the factories and filtration is continuous in all except Gandevi. No factory is having vapour cell, all the factories have got quadruple effect evaporators, coil pans are absent in all the factories, all the low-grade crystallizers in Bardoli and Kodinar factories are fitted with heat-exchange elements and both these factories are having high speed centrifugals which are absent in Gandevi factory.

It will thus be seen that the plants of two new factories *viz.*, Kodinar and Bardoli are having modern features which are lacking in Gandevi, this being quite an old plant. It is also evident that heat economy measures lack to some extent in almost all the factories.

सत्यमेव जयते

2.8 Working results

The data with respect to (*i*) Cane quality, (*ii*) Time account, (*iii*) Recovery and total losses and (*iv*) Fuel consumption are given in Tables IV-Ai, ii, iii, IV-Bi, ii, IV-Ci, ii, iii, and IV-Di, ii respectively.

It will be seen from tables IV-Ai, ii and iii that the average seasonal pol per cent cane in the last four years has varied from 11·90 to 14·10 with primary juice purity variation from 81·7 to 84·8. The cane quality in Kodinar factory has been the best of all with pol per cent cane 13·6 to 14·1 and primary juice purity 83·0 to 84·8. Fibre per cent cane is in general around 12·2 to 14·1.

Tables IV-Bi and ii show the time-account. It will be seen that duration of season in each of the three factories has gone on increasing every year. Duration of season in Bardoli factory started increasing after 1959-60 because canal water for irrigation became available to its area in 1959-60 and then cane crop increased. The duration of season (leaving the duration of Gandevi factory in 1961-62 which was its trial season and of Bardoli factory in 1959-60) has generally varied from 117 to 197 days. The number of hours lost to total available are quite high in Gandevi factory and for the season 1959-60 in Kodinar factory also. This appears to be due to initial teething troubles because 1959-60 was the second season of Kodinar factory and in Gandevi an old plant started working in 1961-62. Apart from the above, the time loss for the remaining seasons in Kodinar factory and for all the four seasons in Bardoli factory has been slightly higher than the normal figure of 10 –12 per cent.

Tables IV-Ci and ii show the position of recovery and total losses. It will be seen that Kodinar factory has registered the highest recovery (11·30—11·58) and Gandevi factory, the lowest (7·96—8·10). Bardoli factory has had recovery of the order of 9·88—10·37. The very low recovery in Gandevi factory appears to be due to 61-62 and 62-63 being its first two seasons and very old plant of small capacity resulting in high total losses. Kodinar factory has recorded the lowest losses (2·27—2·31 leaving the year 1959-60) and losses in Bardoli factory have varied between 2·40 to 2·57. In the matter of overall extraction, it may be seen from Table IV-Ciii, that Kodinar has good efficiency, Bardoli has medium efficiency and Gandevi has very poor overall efficiency.

From Tables IV-Di and ii will be seen the position with regard to fuel consumption. It will be noted that all the factories have consumed their entire production of bagasse and have used extra fuel also. Kodinar has had an extra fuel consumption of 1·27 to 3·47 per cent cane (in terms of bagasse), Bardoli of 3·6 —8·4 per cent and Gandevi has consumed 40·42 per cent extra fuel in its first season and 19·62 per cent in the second season.

Fuel consumption in Gandevi has been very high and this appears to be due to its being a completely steam driven plant of small capacity with no heat economy measures in the boiling house and also high time loss due to initial teething troubles. In the remaining two factories also very few heat economy measures have been adopted.

Table V gives particulars of the existing daily cane crushing capacity of the factories, specifications of their existing milling tandem, expansion as asked for by the factories and financial requirements for expansion and/or modernisation as communicated by the factories.

2.9 Labour strength and productivity

Table VI-A shows the labour strength actually employed in Gujarat factories, the labour considered surplus at present and the labour that would become surplus when schemes of expansion/modernisation become effective.

It will be seen that no factory has reported any surplus labour either at present or after expansion/modernisation.

Table VI-B shows the productivity of each factory in terms of man-days per tonne of sugar for four years. It will be seen that in Kodinar and Bardoli factories, the productivity has been fairly good *viz.*, 5·6 to 9·0 man-days per tonne of sugar produced. In Gandevi factory, the productivity has been very poor *viz.*, 31 ·0 in 1962-63. It appears to be due to the small capacity of the factory and high time loss.

2.10 Utilisation of by-products

Tables VII-A, VII-B and VII-C show the position with respect to utilisation of by-products.

As regards bagasse, all factories are using their entire production as fuel and do not save any bagasse. At present even some extra fuel is also used by the factories but scope is there for saving the bagasse by adopting suitable means of steam and fuel economy.

As regards molasses, none of the factories is having any distillery at present. Bardoli factory has reported that its production of molasses was sold to Alembic distillery and foundries. The factory proposes to have a distillery located at Bardoli to utilise its own molasses and that of Gandevi factory which is 32 miles from Bardoli. Kodinar factory has reported that some of its molasses was surplus due to lack of market and was destroyed and now they are going to start a distillery. Gandevi factory has reported that its production of molasses was sold to various parties.

As regards press-mud, all the factories in Gujarat are sulphitation factories whose press-mud is given to the cultivators for manurial purposes either free of cost or at nominal price.

3. ECONOMIC ASPECTS

3.1 Financial set-up

The nature of ownership, the share capital, the reserves and the net worth of the three Gujarat sugar factories as given in their Balance Sheets for 1961-62 are as follows:—

सत्यमेव जयते

(In lacs of Rs.)

Name of Unit	Paid up capital			Reserves	Total net worth
	Original	Bonus shares	Total		
Co-operatives					
1. Gandevi .	26 ·41	..	26 ·41	0 ·04	26 ·45
2. Bardoli .	44 ·39	..	44 ·39	0 ·06	44 ·45
3. Kodinar .	49 ·62	..	49 ·62	23 ·09	72 ·71
TOTAL.	120 ·42	..	120 ·42	23 ·19	143 ·61

It will be seen that in addition to the share capital of Rs. 120.42 lacs, a sum of Rs. 23 ·19 lacs was also available in reserves at the close of 1961-62 bringing the value of total net worth to Rs. 143 ·61 lacs. Thus the profits so far retained by Gujarat sugar industry in the form of reserves, form 19 ·3 per cent of the initially paid up capital.

Financial analysis* has been made by the Committee for the years 1953-54, 1957-58 and 1961-62 on the basis of Balance Sheets received from sugar factories and the results are shown below:—

(Amounts in lacs of Rs.)

Particulars	1953-54	1957-58	1961-62	Comparative Development	
				1957-58 over 1953-54	1961-62 over 1957-58
1. No. of units .		1	3	1	2
2. Gross block .		87·55	309·03	+87·55	+221.48
3. Accumulated depreciation .		1·75	79·25	+ 1·75	+ 77·50
4. Net block .		85·80	229·78	+85·80	+143·98
5. Net worth .		29·44	143·61	+29·44	+114·17
6. Surplus of net worth over net block . .		—56·36	—86·17	—56·36	— 29·81
7. Debentures & long term loans		57·88	196·27	+57·88	+138·39
8. Available resources . .		1·52	110·10	+ 1·52	+108·58
9. Investment .		–	1·33	..	+ 1·33
10. Investment as % of surplus net worth . .		..	..		
11. Net block as % of gross block .		98·0	74·4		

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*Similar to the analysis made by the Tariff Commission in paragraph 15·5 of their report on the cost structure of sugar (1959).

It will be seen that at the close of 1961-62, as against the net block of Rs. 229·78 lacs, the net worth of the industry was Rs. 143·61 lacs only showing a short fall of Rs. 86·17 lacs. A sum of Rs. 196·27 lacs was obtained by the industry in the form of long term loans and debentures so that the net available resources were of the order of Rs. 110·10 lacs. The industry invested a sum of Rs. 1·33 lacs in the form of shares and debentures of other companies and in Government securities and the balance of Rs. 108·77 lacs was used mainly as the working capital. These figures are also indicative of the development that has taken place during the last eight years.

3.2 Profit and loss position

The profit and loss position as revealed from Balance Sheets of Gujarat sugar factories for the last ten years is given in Table VIII-A and it would generally indicate the financial position of the industry. It will be seen from this table that the average profit works to Rs. 1·72 lacs per year per factory.

Table VIII-B is based on a study of profit or loss made by factories during the two periods of 5 years each *i.e.* from 1952-53 to 1956-57 and 1957-58 to 1961-62 and also for the entire period of 1952-53 to 1961-62. As complete data is not available the statement gives only a rough indication. The position is summarised below:—

	1952-53 to 1956-57	1957-58 to 1961-62	1952-53 to 1961-62
(i) *Factories incurring losses*			
Number	1	—	1
Average loss per year per factory (in lacs of Rs.)	6·01	—	1·02
(ii) *Factories making profit*			
Number	—	2	1
Average profit per year per factory (in lacs of Rs.)	..	3·66	12·68
(iii) *Total*			
Number	1	2	2
Average profit or loss per year per factory (in lacs of Rs.)	—6·01	3·66	1·72

Dividends Paid.—Gujarat sugar factories have not declared any dividends up to 1961-62.

4. Specific Problems of the Sugar Factories

1. Gandevi

1. Initially a license for 1000 tonnes/day was granted in 1957. But subsequently due to difficulties in collecting enough share capital and tight foreign exchange position, they were made to surrender the license for indefinite period. Therefore, with the finances available, the present plant was purchased from Hamira and installed.
2. Present capacity of 356 tonnes is very uneconomic. Labour load of 518 is very high for the present capacity.
3. This *mandal* was registered in 1956 and the cultivators were given understanding that they will get perennial irrigation from the Kakarpara canal. But until now the Government is giving only seasonal water *i.e.* in the monsoon and winter seasons only.
4. In the area of the factory most of the growers are small holders having mainly fruit plantations and as such they hesitate to take to cane cultivation.
5. Lack of *pucca* roads particularly in the interior, which results in lot of breakage of cane transport vehicles.

2. Bardoli

1. Present capacity is insufficient to cope up with all the cane of the member-growers. Factory had to reduce the allotment of area for cane planting for this reason.
2. Rainfall is heavy (more than 150 cms.), soils are heavy and hence water retentive. Therefore, it takes a long time, after the monsoon, for cane to get maturity and roads to be pliable. Also, after April recovery falls down steeply. Optimum recovery period is, therefore, 15th November—15th April.
3. Lack of *pucca* roads.

3. Kodinar

1. Lack of *pucca* roads.
2. Present capacity of the factory is inadequate and factory is unable to take the whole quantity of available cane, even from its own members.

4. Bhavnagar

Short history.—The factory with a capacity of 400/450 tons was established in 1946 with the assistance of the Government of India. The then Bhavnagar State fixed the price of cane by a notification and directed its delivery to the factory. The price and distribution of sugar was controlled as at present

There was great disparity in the price of *gur* and that of sugar fixed by the Government (Rs. 40 to 45 and Rs. 12/8/- per B. maund respectively). The cane supply to factory, therefore, dwindled and average supply to the factory came down to 50/60 tons per day. The Government of India, refused to give any increase in the price of sugar. The factory, was therefore, closed down after making about 6000 bags.

Before the beginning of the season 1947-48 all the States of Saurashtra were amalgamated and all the privileges given to the factory by the former Bhavnagar State were withdrawn. Though the factory commenced crushing but it had to stop subsequently after making 7000 bags due to failing cane supplies.

The Government of Saurashtra set up a Technical Committee of experts to go into details and make suitable recommendations. However, its recommendations were not implemented.

The factory had to be kept idle. When Saurashtra was merged with the Bombay State, the Govt. of Bombay set up a Committee to go into the question again and one of the several recommendations made by this Committee was to establish a Cane Development Board which should form a Cooperative Society for growing cane and assure supply to the factory, or alternatively to take over this factory and run it on co-operative basis.

When Gujarat became a separate State, Shri Jivraj Mehta, the then Chief Minister was authorised by the Company to fix the price of the assets of the Company for the sale of the same to the proposed society. The question remained pending for 2 years and last year the Company was informed that forming of a Co-operative Society was not possible. Now, a High Power Committee has been set up by the Gujarat Government to find a solution for working this factory.

4. RECOMMENDATIONS

A study of the general, technical and economic aspects of the sugar industry in Gujarat shows that so far there are only three working factories in the State, all co-operatives, of which one (Gandevi) is a small second hand plant of 356 tonnes capacity and the other two (Bardoli and Kodinar) are new plants of 813 and 1,016 tonnes capacity respectively. One factory at Dhola (Bhavnagar) of 457 tonnes capacity is lying idle. While Bardoli and Kodinar have stabilized and are doing fairly well Gandevi still cannot count upon an assured supply of cane.

The cane areas of these factories have good soil, fairly good rainfall and quite satisfactory irrigation facilities except to some extent in the Gandevi area where perennial source of irrigation is at present lacking. Even there projects of perennial irrigation are in hand. The position with regard to communications is, however not satisfactory. The yield of sugarcane per acre is 20—25 tonnes and the quality of cane is good. Recoveries in the Bardoli and Kodinar factories are of the order of 10·0—10·4 and 11·3—11·6 respectively. Only the Gandevi factory and its cane area have still to develop. While the Bardoli and Kodinar factories are only required to be modified for fuel economy the Gandevi factory requires considerable modernisation and expansion.

The economic condition of Gandevi factory is so far not satisfactory.

These factories have no problems in respect to surplus labour or disposal of by-products.

The Committee's views with regard to the betterment of the factories are as follows:—

1. Cane development

(*a*) *Irrigation.*—Only the Gandevi area does not appear to enjoy full facilities of irrigation and it is outside the area of perennial irrigation schemes. The only alternative therefore, is to develop well irrigation.

(*b*) *Package Programme.*—The scheme for intensive cane development has been launched in the Surat district. The Committee hopes that the Gandevi area too would be covered under this scheme.

(*c*) *Communications.*—This is one of the serious problems of the Gujarat State sugar industry. Not only is there a paucity of roads but the condition of the existing roads is bad. The further requirement of roads as estimated by the factories is 320 kilometers. This will cost nearly 1·8 crores of rupees. The number of bridges and culverts have not been worked out. This should be done; in fact a proper blue print for the development of communications in sugar factory areas should be worked out by the State Government. The Committee was informed that the Government has for this purpose already prepared a scheme costing Rs. 87·0 lacs which will be contributed by the Central and State Governments and the beneficiaries on the usual basis. The Committee recommends that the execution of this scheme should be taken in hand immediately and plans made for meeting the balance requirements.

(*d*) *Sugarcane Research.*—The Committee learnt with satisfaction that a Sugarcane Research Station has been started at Bardoli, Regional Sugarcane Research Station exists at Kodinar and another is proposed to be started at Gandevi. The Committee hopes that these research centres would be developed as soon as possible for there is still considerable scope for improvement with respect to yield and quality of sugarcane grown in Gujarat.

2. Modernisation and expansion

Of the three working factories in Gujarat, two (Bardoli and Kodinar) are new plants and need only modernisation with respect to achieving better fuel economy. The factories have reported considerable increase in cane production and need for finishing the entire cane available before the end of April. Consequently they have asked for expansion to at least 1500 tonnes. The milling plants in both these factories have scope for expansion and the Committee recommends that their expansion to 1500 tonnes should be allowed. This will help to stabilise their economy. As regards Gandevi, the existing plant is a second hand small plant and needs considerable modernisation. The factory is proposing to extend its capacity in stages, first up to 500 tonnes and then to 800 tonnes. The Committee is of the view that instead of trying to modernise and expand this old plant, which will need considerable investment, it would be preferable for the factory to go in for a completely new plant of 1000/1200 tonnes with potential for future expansion to 1500 tonnes and by the time such a scheme materialises, production of sugarcane should be developed so as to obtain full supplies for the new plant. The Committee's recommendations in regard to expansion are as follows:—

Sl. No.	Name of Factory	Existing daily cane crushing capacity (tonnes) 1963-64 season	Capacity up to which extension license already granted (tonnes)	Expansion as asked for by the factories (tonnes)	Expansion as recommended by the Committee (tonnes)
1.	Gandevi . .	356 (Licensed capacity is 1,016).	..	800	1,200
2.	Bardoli . .	813	1,500	1,500	1,500
3.	Kodinar . .	1,016	1,500	1,500	1,500

The total financial requirement for rehabilitation, modernisation and expansion of the above factories has been estimated by the Committee as Rs. 1·7 crores.

3. **Bhavnagar factory.**—The histroy and present position of this factory has been given earlier. The Committee is of the view that there is no point in reviving this small plant of 450 tons capacity. If and when cane area develops in the region a new plant of at least 1500 tonnes capacity should be established there.

4. Finance required

The total cost of rehabilitation, modernisation and expansion of Gujarat factories comes to Rs. 1·7 crores and that on improvement of communications to Rs. 1·80 crores.

TABLE I-A

Area Under Cane

Sl. No.	Name of Factory		Capacity (tonnes/ day)	1959-60	1960-61	1961-62	1962-63
1.	Gandevi	.	356*	..	..	1·84	1·86
2.	Bardoli	.	813	N.A.	N.A.	4·79	4·47
3.	Kodinar	.	1,016	4·76	6·60	5·74	6·71
					TOTAL	12·37	13·04

*Licensed capacity is 1,016 tonnes.
N.A.=Not Available.
Source—Factory Returns.

सत्यमेव जयते

TABLE I-B

Estimated Yield of Cane per Acre

Sl. No.	Particulars	Yield per acre (tonnes)			
		1959-60	1960-61	1961-62	1962-63
1.	In whole State . . .	N.A.	20·52	21·53	20·97
2.	In development zones . .	N.A.	24·38	21·59	22·86

Source—Indian Central Sugarcane Committee.

TABLE I-C

Per cent Utilisation of Cane Crop for White Sugar

Sl. No.	Name of Factory		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	. .	..	...	60·0	77·5
2.	Bardoli	. .	85·0	93·4	95·2	93·7
3.	Kodinar	. .	27·0	82·0	91·0	82·0

Source—Factory Returns.

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Actual supplies made to the factories ('000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1.	Gandevi .	356*	..	..	12·00	37·00
2.	Bardoli .	813	48·00	111·00	140·00	150·00
3.	Kodinar .	1,016	39·42	148·16	159·33	165·31
		TOTAL	87·42	259·16	311·33	352·31

*Licensed capacity is 1,016 tonnes.

Source—Factory Returns.

TABLE I-E

Percentage of Gate, Road and Rail Cane and Number of Growers

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Per cent gate cane	Per cent road cane	Per cent rail cane	No. of growers supplying cane to the factory (1962-63)
1.	Gandevi .	356*	100·00	Nil	Nil	1,084
2.	Bardoli .	813	100·00	Nil	Nil	6,000
3.	Kodinar .	1,016	100·00	Nil	Nil	2,506
						9,590

*Licensed capacity is 1,016 tonnes.

Source—Factory Returns.

TABLE II-A

Irrigation

Sl. No.	Name of Factory	Area under cane (acres)	Present position regarding irrigation	Problems relating to irrigation
1.	Gandevi . .	1,900	Whole cane area is irrigated.	Irrigation available in monsoon and winter season only. Perennial irrigation is not available.
2.	Bardoli . .	4,800	Whole cane area is irrigated.	
3.	Kodinar . .	6,700	Whole cane area is irrigated.	

Source : Factory Returns.

TABLE II-B

Manures and Fertilizers

Sl. No.	Name of Factory	Possible area under cane (acres)	Requirements of manures and fertilizers		
			Chemical fertilizers (tonnes)	Cakes (tonnes)	Green manure seed (tonnes)
1.	Gandevi	2,500	1 500	750	500
2.	Bardoli	4 800	2,900	1,600	N.A.
3.	Kodinar	10,000	4,250	4,556	15

N.A.=Not Available.

Source :—Office of the Registrar, Cooperative Societies & factory returns.

TABLE II-C

Cane Seed

Sl. No.	Name of Factory	Possible area under cane (acres)	Amount of seed requirement (yearly) tonnes	Remarks
1.	Gandevi	2,500	2,500	This is managed from the factory farm as well as from cultivators' own field.
2.	Bardoli	4,800	14,400	Arrangements are made by the factory to supply seed to their members.
3.	Kodinar	10,000	14,000	The cultivators make their own arrangement for seed.
		TOTAL	30,900	

Source : Office of the Registrar, Cooperative Societies and Factory Returns.

TABLE II-D

Means of Communications

Sl. No.	Name of Factory	Existing *pucca* roads in factory zone (kms.)	Requirements: *Pucca* roads in Kms.	Requirements: No. of bridges	Requirements: No. of culverts	Remarks
1.	**Gandevi** . .	90	120	N.A.	N.A.	
2.	**Bardoli** . .	120	150	N.A.	N.A.	As per Govt. plans, Rs. 25 lacs will be spent for the construction of roads, bridges and culverts in the operational area of the factory.
3.	**Kodinar** . .	119	50	N.A.	N.A.	
	TOTAL	329	320			

Source :—Office of the Registrar, Cooperative Societies and Factory Returns.

TABLE III-A

Milling Plants

Sl. No.	Name of Factory	Capacity (tonnes/day)	Cane knives: Total H.P. & No. of sets	Milling Tandem	Mill Drive: Type	Mill Drive: Total H.P.
1.	Gandevi . .	356*	100(2)	11/20″×40″	E	230
2.	Bardoli . .	813	185(2)	12/26″×48″	T	800
3.	Kodinar . .	1,016	246(2)	15/26″×48″	T	1,000

*Licensed capacity is 1,016 tonnes.

E—Steam Engine.

T—Steam Turbine.

Source :—Factory Returns.

TABLE III-B

Power and Steam Generating Plants

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Power generating units (Total K.W.)	Boilers	H. S. Per cent boilers H.S.	
				No./H.S./ (sq. ft.) pressure/ (p.s.i.g.)	Economiser	Superheater
1.	Gandevi . . .	356*	82	3/7800/200	25	Nil
2.	Bardoli . . .	813	850	3/12000/300	13	35
3.	Kodinar . . .	1,016	1,000	3/23000/300	44	E

*Licensed capacity is 1,016 tonnes.

E—Exists, but H. S. not available

Source :—Factory Returns.

TABLE III-Ci

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Juice Weighing manual/ automatic	Juice Heaters		
				Total H.S. sq. ft.	Vertical or Horizontal	V.L. Juice Heater H.S. sq. ft.
1.	Gandevi . .	356*	M	2,650	N.A.	Nil
2.	Bardoli . .	813	A	2,400	V	Nil
3.	Kodinar . .	1,016	A	3,300	V	Nil

*Licensed capacity is 1,016 tonnes.

M—Manual

A—Automatic

V—Vertical.

N.A.—Not available.

Source :—Factory Returns.

TABLE III-Cii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Sulphitation process batch/continuous	Settling	Filtration	Preheater H.S. sq. ft.	Vapour cell H.S. sq. ft.	Evaporators	
								Type	Vapour bleeding
1.	Gandevi	356*	B	C	B	Nil	Nil	Q	No
2.	Bardoli	813	C	C	C	800	Nil	Q	Yes
3.	Kodinar	1,016	B	C	C	Nil	Nil	Q	Yes

*Licensed capacity is 1,016 tonnes.

B—Batch

C—Continuous

Q—Quadruple.

Source :—Factory Returns.

TABLE III-Ciii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Pans		Low grade crystallizers	
			Total capacity (tonnes)	Per cent coil capacity	Number	Percent water cooled capacity
1.	Gandevi	356*	36	Nil	5	60
2.	Bardoli	813	142	Nil	6	100
3.	Kodinar	1,016	154	Nil	6	100

*Licensed capacity is 1,016 tonnes.

Source : Factory Returns.

TABLE III-Civ

Boiling House Equipment

Sl. No.	Name of Factory]	Capacity (tonnes/day)	Centrifugals			
			Ordinary No.	Ordinary Size	High Speed No.	High Speed Size
1.	Gandevi	356*	16	18″×36″	Nil	..
2.	Bardoli	813	Nil	..	6 4	32″×49″ 24″×42″
3.	Kodinar	1,016	4	27″×47″	5	27″×47″

*Licensed capacity is 1,016 tonnes.

Source :—Factory Returns.

TABLE IV-Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	12·61	11·90
2.	Bardoli	12·54	12·46	12·80	12·43
3.	Kodinar	14·10	13·59	13·85	13·78

Source :—Factory Returns.

TABLE IV-Aii

Cane Quality (Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	15·18	14·09
2.	Bardoli	12·20	12·36	13·60	13·40
3.	Kodinar	14·10	13·59	12·86	12·29

Source :—Factory Returns.

TABLE IV-Aiii

Cane Quality (Primary juice purity)

Sl. No.	Name of the Factory	Primary Juice purity			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	83·47	82·24
2.	Bardoli	82·29	82·74	82·52	81·71
3.	Kodinar	82·97	83·71	84·69	84·84

Source :—Factory Returns.

TABLE IV-Bi

Time Account (Duration of season)

Sl. No.	Name of Factory	Duration of Season (days)			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	79	177
2.	Bardoli	82	152	178	197
3.	Kodinar	117	161	162	166

Source :—Factory Returns.

TABLE IV-Bii

Time Account (Time loss)

Sl. No.	Name of Factory	Time loss per cent available			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	62·48	33·00
2.	Bardoli	13·72	15·10	13·49	16·38
3.	Kodinar	65·00	14·05	12·41	14·35

Source :—Factory Returns.

TABLE IV-Ci

Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	8·10	7·96
2.	Bardoli	10·16	10·00	10·37	9·88
3.	Kodinar	11·37	11·30	11·58	11·53

Source :—Factory Returns.

TABLE IV-Cii

Technical Efficiency (Total losses)

Sl. No.	Name of Factory	Total losses per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	4·53	3·95
2.	Bardoli	2·40	2·48	2·45	2·57
3.	Kodinar	2·74	2·31	2·29	2·27

Source :—Factory Returns.

TABLE IV-Ciii

Technical Efficiency (Reduced overall extraction)

Sl. No.	Name of Factory	Reduced Overall Extraction			
		1959-60	1960-61	1961-62	1962-68
1.	Gandevi	..	..	72·66	74·18
2.	Bardoli	83·76	83·54	84·82	82·65
3.	Kodinar	83·82	85·61	85·47	85·25

Source :—Factory Returns.

सत्यमेव जयते

TABLE IV-Di

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	77·53	51·89
2.	Bardoli	32·27	29·29	31·53	30·83
3.	Kodinar	N.A.	31·69	27·61	27·26

N.A :—Not Available.

Source :—Factory Returns.

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Gandevi	..	..	40·42	19·62
2.	Bardoli	8·38	4·76	4·00	3·60
3.	Kodinar	N.A.	3·47	1·27	1·65

N.A.—Not Available.

Source :—Factory Returns.

सत्यमेव जयते

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of factory	Capacity (tonnes/ day)	Specifications of existing milling tandem	Expansion as asked for by the factories (tonnes)	Financial requirement as given by the factories (lac Rs.)
1.	Gandevi . .	356*	11/20″×40″	I Phase—500 II Phase—800	5·00 39·00
2.	Bardoli . . .	813	12/26″×48″	1500	37·00
3.	Kodinar . . .	1,016	15/26″×48″	I Phase—1500 II Phase—2000	45·00 not given

*Licensed capacity is 1,016 tonnes.

Source :—Factory Returns.

TABLE VI-A

Existing Strength of Labour and Labour Considered Surplus at Present and after Modernisation

Sl. No.	Name of Factory	Capacity (tonnes/ days)	Total labour employed	Labour surplus now		Labour surplus after expansion/moderni-sation	
				Skilled and semi-skilled	Unskilled	Skilled and semi-skilled	Unskilled
1.	Gandevi .	356*	518	Nil	Nil	Nil	Nil
2.	Bardoli .	813	545	Nil	Nil	Nil	Nil
3.	Kodinar .	1,016	642	Nil	Nil	Nil	Nil
	TOTAL		1,705				

*Licensed capacity is 1,016 tonnes.
Source :—Factory Returns.

TABLE VI-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Man days/tonne of sugar			
			1959-60	1960-61	1961-62	1962-63
1.	Gandevi . .	356*	..	..	42·08	31·00
2.	Bardoli . .	813	9·08	7·45	6·67	7·22
3.	Kodinar . .	1,016	16·82	6·17	5·67	5·59

*Licensed capacity is 1,016 tonnes.

TABLE VII-A

Utilisation of By-Products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (average of 5 seasons)			
			Produc-tion ('000 tonnes)	Used as fuel ('000 tonnes)	Saved & sold ('000 tonnes)	Value realised Rs.
1.	Gandevi . .	356*	8·20	8·20	Nil	Nil
2.	Bardoli . .	813	26·41	26·41	Nil	Nil
3.	Kodinar . .	1,016	32·44	32·44	Nil	Nil
	TOTAL . .		67·05			

*Licensed capacity is 1,016 tonnes.
Source :—Factory Returns.

TABLE VII-B

Utilisation of By-Products (Molasses)

Sl. No.	Name of Factory	Molasses (average of 5 seasons)				
		Capacity (tonnes/day)	Production ('000 tonnes)	Utilised for distillery and trade ('000 tonnes)	Surplus left (tonnes)	Value realised ('000 Rs.)
1.	Gandevi . .	356*	1·29	1·29	Nil	7·39
2.	Bardoli . .	813	4·15	4·15	Nil	N.A.
3.	Kodinar . .	1,016	5·19	N.A.	some molasses was destroyed	18·84
	TOTAL .		10·63			

*Licensed capacity is 1,016 tonnes.

N.A.=Not Available.

Source :—Factory Returns.

सत्यमेव जयते

TABLE VII-C

Utilisation of By-Products (Press-mud)

Sl. No.	Name of Factory	Press-mud (average of 5 Seasons)				
		Capacity (tonnes/day)	Production ('000 tonnes)	Sold or utilised as manure ('000 tonnes)	Surplus left (tonnes)	Value realised Rs.
1.	Gandevi . .	356*	0·56	0·17	385	517
2.	Bardoli . .	813	3·34	3·34	Nil	N.A.
3.	Kodinar . .	1,016	4·44	N.A.	N.A.	N.A.
	TOTAL . .		8·34			

*Licensed capacity is 1,016 tonnes.

N.A.=Not Available.

Source : Factory Returns.

TABLE VIII-A

Profits After Tax or Loss of the Factories During Ten Years Ending 1961-62.

(In lacs of Rupees)

Sl. No.	Name of Ftactory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Gandevi . .									N.A.	N.A.	N.A.	N.A.
2.	Bardoli . .					(—) 6·01	0·20	0·63	N.A.	1·11	N.A.	(—)4·07	(—)1·02
3.	Kodinar . .									N.A.	12·68	12·68	12·68
	Average .					(—) 6·01	0·20	0·63	N.A.	1·11	12·68	8·61	1·72

N.A.=Not Available.

NOTE.—Determination of income tax on profits is a very elaborate process and it has not been possible for this Committee to assess the exact position. Fifty per cent of the gross profit has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII-B

Profitability of the Factories in Different Capacity Slabs

(In lacs of Rupees)

Sl. No.	Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available.	Total profit or loss for the above period.	Average profit or loss per year.	No. of years for which data available.	Total profit or loss for the above period.	Average profit or loss per year.	No. of years for which data available.	Total profit or loss for the above period.	Average profit or loss per year.
Factories with capacities between 750 tonnes and 999 tonnes.										
1.	Bardoli	1	(—)6.01	(—)6.01	3	1.94	0.65	4	(—)4.07	(—)1.02
Factories with capacities of 1000 tonnes and above.										
2.	Kodinar	—	—	—	1	12.68	12.68	1	12.68	12.68

MAHARASHTRA

1. GENERAL ASPECTS

1.1 The Maharashtra State consists of 26 districts and is situated between latitude 16·4° to 22·1° (North) and longitude 72·6° to 80·9° (East) and is thus in the tropical belt. The sugar factories are situated in eight districts *viz.*, Ahmednagar, Aurangabad, Kolhapur, Nasik, Poona, Sangli, Satara and Sholapur with maximum concentration in Ahmednagar district. In 1963-64 there were 33 working factories in the State, 20 of these being in cooperative sector and 13 in private sector.

The normal annual rainfall in various regions of the State ranges between 61 cms. to 259 cms. with minimum rainfall in Ahmednagar area and maximum in Ratnagiri area. The range of minimum and maximum temperatures is about 7°C (in January) and 44°C (in April-May) respectively.

1·2 Area, population, agricultural and industrial employment and economic condition of people

The total area of the State is 3,06,345 sq. kilometres and the average density of population is 129 per sq. kilometre. Percentage of workers to total population is about 47.9, of agricultural workers to total workers 69·9, of industrial workers (those in manufacturing industries) to total population 3·3, and of workers in sugar industry to the industrial workers 1·8. Per capita income for the year 1960-61 has been estimated at Rs. 468·54 at current prices.

1·3 Importance of sugarcane crop and sugar industry

Large scale sugarcane cultivation has developed in this State on the completion of the schemes of perennial irrigation in the last few years, *e.g.* the Girna, Nira and the Deccan canal systems. The sugarcane crop now occupies an important place in the agricultural economy of the State. This crop, besides providing substantial revenue to the State as well as the national exchequer, has bestowed considerable prosperity on cane growers.

Out of 445·9 lac acres of net area sown in the State in 1961-62, about 3·8 lac acres was under sugarcane. It was about 6·7 per cent of the total area under cane in the whole of the country.

The sugar industry occupies quite a significant position in the industrial structure of the State. It sustains about 55,000 cultivators and nearly 24,000 factory workers besides a large number of persons carrying on small trades in the vicinity of the sugar factories. The sugar industry pays about Rs. 25 crores annually to the cane growers of the State and the Central and State Governments derive an income of about Rs. 15 crores as Excise Duty and Rs. 2·2 crores as purchase tax respectively.

1·4 Establishment and growth of the sugar industry in Maharashtra

Prior to 1932, there was only one working sugar factory in Maharashtra but as a result of the grant of the Fiscal Protection to the sugar industry in 1932, 7 more factories sprang up in the years 1933 and 1934. There were, thus, eight working sugar factories in 1934-35. This number gradually went on increasing and went up to 13 in 1950-51. Of these 13 factories, 12 were in the private sector and only one was in the cooperative sector. This first cooperative factory at Pravaranagar came up in 1950. The number of sugar factories working in the various years since 1950-51 has been as follows:

Years	No. of working factories
1950-51	13
1951-52	13
1952-53	13
1953-54	12
1954-55	13
1955-56	14
1956-57	15
1957-58	20
1958-59	25
1959-60	26
1960-61	27
1961-62	27
1962-63	29
1963-64	33

NOTE:—Some of the factories of existing Mysore and Gujarat States which used to be grouped wih this region prior to 1960 have not been taken into account.

It will be seen that from 1950-51 to 1954-55, the position almost remained static. Then, with the advent of the cooperative movement in the country and availability of increased perennial irrigational facilities, the sugar industry in Maharashtra underwent a phenomenal expansion and the number of working factories became 29 in 1962-63 (actually there were 30 factories but Belvandi did not work in 1962-63). Of these 17 factories which came into existence between 1955 to 1962, all except one were in the cooperative sector. Three more factories *viz.*, Niphad, Kumbhi-Kesari and Sanjivani (all of them cooperatives) started working in the year 1963-64, and thus in 1963-64 there were 33 working sugar factories in Maharashtra—20 in co-operative and 13 in private sector.

1·5 Distribution of sugar factories in Maharashtra

The distribution of the thirtythree factories working at present in the various districts and their existing daily cane crushing capacities are as follows:

Sl. No.	Name of the district	Name of the factory	Existing daily cane crushing capacity in tonnes (1963-64)
1	2	3	4
1.	Ahmednagar	(*i*) Belvandi	305
		(*ii*) Changdeonagar	813
		(*iii*) Ashoknagar	1,016
		(*iv*) Ganeshnagar	1,016
		(*v*) Harigaon	1,016
		(*vi*) Kopergaon	1,016
		(*vii*) Lakshmiwadi	1,016

1	2	3	4
		(*viii*) Sakarwadi	1,016
		(*ix*) Sanjivani (Takli)	1,016
		(*x*) Tilaknagar	1,016
		(*xi*) Rahuri	1,219
		(*xii*) Pravaranagar	1,473
2.	Aurangabad	(*i*) Gangapur	1,016
3.	Kolhapur	(*i*) Bhogawati	1,016
		(*ii*) Bidri	1,016
		(*iii*) Ichalkaranji	1,016
		(*iv*) Kumbhi-Kesari	1,016
		(*v*) Warnanagar	1,016
		(*vi*) Kolhapur	1,727
4.	Nasik	(*i*) Girna	1,016
		(*ii*) Niphad	1,016
		(*iii*) Ravalgaon	1,219
5.	Poona	(*i*) Bhawaninagar	813
		(*ii*) Malegaon	1,016
		(*iii*) Nira	1,016
		(*iv*) Walchandnagar	1,422
6.	Sangli	(*i*) Sangli	1,016
7.	Satara	(*i*) Phaltan (Sakharwadi)	813
		(*ii*) Phaltan (Shriram)	1,016
		(*iii*) Karad	1,270
8.	Sholapur	(*i*) Akluj	1,016
		(*ii*) Saswadmali	1,016
		(*iii*) Shreepur	1,321

1.6 Sugarcane development activities

The Sugarcane Development Scheme was initiated in the State in 1949 and is under the control of the Sugarcane Specialist from 1950. In the first instance, the activities were restricted to 62,000 acres comprising roughly 22,000 acres of the factory area and 40,000 acres of the cultivators' area surrounding the sugar factories. From 1953, an additional area of 12,000 acres in Kolhapur district was brought under the scheme which included (*a*) supply of improved seed, (*b*) manurial demonstrations, (*c*) zonal centres, (*d*) compost drive, (*e*) crop protection service, and (*f*) award of prizes for cane competitions.

(*i*) *Organisation*

For each canal zone in the Deccan, one Agricultural Officer assisted by an Agricultural Assistant for every 8,000 acres has been stationed for carrying on the development activities. The crop protection service is looked after by the Crop Protection Officer with his headquarters at Ahmednagar and the whole organisation is under the direct control of the Sugarcane Specialist.

(*ii*) *Supply of the Improved Seed*

Under this item, Co 419 variety of sugarcane is distributed to sugar factories and cultivators. The disease-free seed of Co 419 is supplied to the factories every year who multiply it in successive stages to replenish their stock of the planting material once in five years. The multiplication in the cultivators' area is done by establishing nurseries with the registered seed growers. The staff of the scheme renders advice for the proper management of these nurseries.

(iii) Manurial Demonstrations

In order to give effective demonstrations of balanced manuring, several trials are conducted on sugar factory estates and in the fields of progressive growers.

(iv) Zonal Centres

Varietal, manurial and cultural trials are carried out at Sugarcane Research Station, Padegaon, and the trials found to be promising there, are subsequently carried out at the sub-stations with slight modifications suitable to the local conditions. These sub-stations act as centres for demonstration in improvement of cane cultivation and supply of seed of improved cane varieties to the cultivators in the surrounding areas.

(v) Compost Drive

In order to encourage composting of cane trash, subsidies are given.

(vi) Cane Production Service

It is fortunate that in Maharashtra, infestation of pests and diseases of sugarcane is low. The staff of the Sugarcane Development Scheme constantly keep a watch on the incidence of pests and diseases and the cultivators are constantly advised to adopt remedial measures. The equipment such as sprayers. dust-guns etc. are kept in readiness at the depot of each Agricultural Assistant to be given on hire to cultivators.

(vii) Cane Competition

The competitions in cane yields have become a regular feature of this scheme since 1952-53. There are two kinds of competitions conducted in the State. One is for 'Higher Production of *Gul*' and the other is for 'Higher Yield of cane and Higher Recovery'. The competitions for higher production of *gul* are conducted for the two tracts *viz.* the Deccan Canals and Kolhapur separately. The minimum yield of *gul* for the purpose of award of prizes has been fixed at 250 and 150 b. mds. for these two tracts respectively. The minimum figures for the competitions in higher yield and higher recovery of cane have been fixed at 125 tons per acre and 11·50 per cent respectively. The amount of the award of the first prize is Rs. 1,000/- and of the second Rs. 500/-.

1.7 Sugarcane research

Sugarcane Research in Maharashtra dates back to the year 1892, when the first research centre was started at Manjri (a place 9 miles from Poona). But later the work was shifted to Padegaon in 1932, which presented a better site for experimentation being representative of Deccan Canal Zone. The Sugarcane Research Scheme was sanctioned in 1932 in the first instance for a period of five years. This scheme got subsequent three extensions and was finally closed in 1944. Thus from 1932 to 1944, the work continued uninterrupted resulting in very useful contribution to the development of sugarcane cultivation in the Deccan Canal Zone. It was during this period that pioneering work on genetic soil survey and classification was initiated which marked a distinct phase in soil research and encouraged similar work in the country. Five new Research Sub-stations were established during this period on different Deccan Canals to test the results of research carried out at Padegaon Farm.

From 1944 to 1949, there was practically a lull in the field of sugarcane research in the State when the Padegaon Station was converted into an Agricultural Research Station, and work on other irrigated crops including horticultural plants was undertaken.

However, during the year 1949, two schemes *viz.*, (i) Sugarcane Research Scheme, and (ii) Sugarcane Development Scheme, were approved by the Indian Central Sugarcane Committee and the post of the Sugarcane Specialist was created.

During the subsequent years, sugarcane research and development activities in the State received fresh impetus and the entire approach to the problem of sugarcane agriculture was reoriented in order to meet the growing needs of the ever expanding sugar industry of the State.

A brief review of the work undertaken at the various sections of Sugarcane Research Station, Padegaon is given below:—

(i) Soil Physics Section

The problems arising out of continuous application of irrigation, manuring, cropping etc., are handled by this section. The genetic classification of soil made by this section added a new chapter of knowledge to the science of sugarcane agriculture.

(ii) Crop Physiology Section

It deals with water requirement during different stages of plant growth, mineral uptake by the crop and other physiological studies in relation to germination and root development.

(iii) Agronomy Section

It makes use of the findings of other sections and coordinates the work on the fields. Among the various items that are studied are the testing of new varieties of cane, various manurial schedules and improvement in cultural practices with a view to reducing the cost of cultivation and at the same time maintaining high tonnage and recovery of sugar.

In addition to the above, specialised work on investigation of diseases of sugarcane and crop protection measures is also undertaken. These experiments are not merely restricted to Padegaon station but are suitably tested with different soil types on the various sub-stations which are named below:—

1. Regional Sugarcane Research Station, Kolhapur.
2. Sugarcane Research Sub-station, Lakhamapur.
3. Sugarcane Research Sub-station, Kopergaon.
4. Sugarcane Research Sub-station, Deolali.
5. Sugarcane Research Sub-station, Akluj.

1.8 Cess/Purchase tax on cane, its collection

In Maharashtra, the levy of sugarcane cess has been dicontinued from 1st January, 1962 and on and from 1st January, 1962, a purchase tax on sugarcane has been introduced. The Maharashtra Purchase Tax on Sugarcane Act, 1962, permits the levy of purchase tax at a rate not exceeding one paisa per kilogram of sugarcane purchased. However, from the date of enforcement of the Act (i.e. from 1-1-1962) till today, the rate of tax has been fixed at half paisa per kgm. of sugarcane purchased. The receipts from sugarcane cess/purchase tax for the last four years are as follows:—

Sl. No.	Year	Receipts from Sugarcane Cess/ Purchase Tax (in Lac Rs.)
1.	1959-60	125·11
2.	1960-61	138·80
3.	1961-62	151·47
4.	1962-63	160·70

2. TECHNICAL ASPECTS

2.1 Area under cane, yield per acre and utilisation of cane for white sugar manufacture

There are no clearly defined permanent reserved zones attached to the factories in Maharashtra. However, due to scramble for cane in the recent years on account of increased concentration of sugar factories in several areas, the question of allocation of permanent zones has come up and a zoning committee on the state level is studying the proposition of demarcation of individual factory zones.

Earlier, most of the factories in the private sector had their own cane estates from where the major supplies were received. After the taking over of these estates by the Maharashtra Government under the Land Ceiling Act, and their being subsequently handed over to the Maharashtra State Farming Corporation, these factories have to get the cane from this Corporation. The remaining supplies are drawn from the growers through seasonal or long term contracts entered into between the factory and the growers. The cooperative factories have got their registered member-growers who, according to the bye-laws of the society, are under obligation to supply their entire cane production to these factories. Such member-growers are enrolled according to the raw-material needs of the factories.

The position with respect to the area under cane is given in Table I-A, estimated yield per acre is given in Table I-B, the percentage of the cane crop utilised for white sugar is given in Table I-C and the actual supplies made to sugar factories are shown in Table I-D.

It will be observed that (i) the total area under cane in the factory zones of Maharashtra has gone on increasing every year. For 14 factories it was about 80,000 acres in 1959-60 which increased to 93,000 acres in 1962-63.

The increase in area in Ichalkaranji, Sangli and Warnanagar has been considerable (ii) the average yield for the whole state is 28-33 tonnes per acre, in development zones 41 to 48 and in factory farms 50-55 tonnes per acre.

It may be seen from Table I-C that by and large most of the factories have most of the cane available for crushing. In some factories however, the diversion for *gur* manufacture is considerable. Of the reporting factories such cases are those of Bhogawati, Ichalkaranji, Sangli, Warnanagar, Rahuri and Walchandnagar where they ranged between 26 to 70 per cent of the total production and as much as 30 to 72 per cent of the production was utilised for *gur*, *khandsari* and other purposes (except seed). In the remaining factories such diversion has been negligible.

2.2 Cane supplies to sugarmills

Table I-D shows that the supplies to sugar factories have been the highest in 1960-61 and have varied only slightly in subsequent years.

The position with respect to supplies made at the gate and at road and rail centres and the number of growers supplying cane to each factory is given in Table I-E.

It will be seen that in case of all the factories, cent per cent cane is obtained at the factory gate which is happy position and ensures fresher supplies at minimum transport cost. The Cooperative factories themselves undertake the job of harvesting and transporting the cane of their members to the factory. Most of the private factories, which had till recently their own cane farms, have got tram lines from the fields right upto the factory and cane after being harvested is brought to the factory by the tram cars.

The number of growers supplying cane is 36719 for 20 factories.

2.0 Irrigation, application of manures and fertilizers and supply of cane seed

(a) Irrigation

Sugarcane in factory areas, except in a few cases, is generally grown on canal irrigation or lift irrigation from rivers. Nira, Girna and the Deccan canal systems mostly cater to the needs of irrigation. The Sugarcane Research Station at Padegaon has carried out a study on various aspects of irrigation, such as optimum water requirements, suitable combination of water and doses of fertilizers, contribution from subsoil water table and adjustment of irrigation intervals in different seasons and with different soil types etc. Accordingly therefore the Irrigation Department has fixed up the optimum dose to be 124 inches per acre per year and the crop is given 36-38 irrigations within a period of 12 months.

Whereas the means of irrigation in Maharashtra are generally satisfactory, the Committee learnt that several sugar factories have their specific problems on this important aspect :—

(1) Belvandi factory which is only of 305 tonnes capacity could not expand for want of irrigation facilities in the area and its future existe ce is liked with Ghod and Kukadi Canal projects.

(2) Gangapur factory has reported lack of flow irrigation, which is the main bottleneck in its cane supplies resulting in the new plant to remain uneconomic for want of raw material. The factory has suggested lift irrigation projects on Godavari river near the factory costing Rs. 60 to 70 lacs.

(3) Shreepur factory feels that the irrigation quota of 115 acre-inches allotted by the Irrigation Department falls short of requirements and it should be revised to 140". Water of Vir Dam which is just completed should be given to provide irrigation in 1500 acres of cane in their area.

(4) Saswadmali factory has also felt the shortage of cane and has approached the Government for increasing their gaurantee from 1600 to 2400 acres by supplying canal water from Vir Dam.

(5) Phaltan (Sakharwadi) has suggested provision of lift irrigation through cooperative societies and that irrigation water for sugarcane should be made available from Vir Dam also.

(6) Girna factory has suggested construction of supplementary reservoir to Girna Dam and remodelling of Girna Left Bank Canal, construction of percolation tanks and tube wells in their area for augmenting the existing irrigation facilities to raise more cane.

(7) Ganeshnagar factory has also reported shortage of well water to be a handicap in extension of cultivation and developing cane.

(8) Rahuri factory has suggested deepening of wells and installation of pumping sets for lift irrigation and that power should be made available to reduce the cost of lifting water.

(9) Malegaon factory has suggested the provision of lift irrigation from canals during hot months.

(10) Doodhganga (Bidri) factory mostly depends upon lift irrigation from the rivers and has reported the difficulty during hot months when the rivers go dry. They have proposed Kallanwadi Dam to be undertaken quickly and a geological survey to ascertain if the tubewells could be successfully worked.

(11) Ashoknagar factory proposed lift irrigation scheme to be brought in their area.

(12) Walchandnagar factory has desired the supply of water from Nira right and left bank canals to the cultivators supplying cane, who are at present dependent on well irrigation, which is uncertain.

(13) Ravalgaon factory is situated in a dry area (with about 23 cm rainfall) where the rainfall fails once in two or three years resulting in crop failure. The irrigation facilities in the factory area should be doubled by additional construction of tanks and desilting of the Chankapur Tank.

The Committee also learnt during these discussions with the State Government Officials that the following additional irrigation projects have been taken up in the sugarcane areas of the State which will cover additional area under cane as shown below :

Total cane area under canals—65,000 acres (basic cane)

Sl. No.	Name of the proposed project	Further increase in cane acreage
1.	Krishna Canal area	7,000 acres.
2.	Vir Dam	4,500 ,,
3.	Ghod Project	4,800 ,,
4.	Moola Project	12,000 ,,
5.	Girna Project	10/12,000 ,,
6.	Halatbarda	2,700 ,,
	TOTAL	43,000 acres.

Besides the above there are reported to be various other cooperative lift irrigation projects also which will bring up yield as well as new areas under cane.

The Irrigation Department of the State is proposing to de-centralise the administration of the canal and the irrigation system with a view to improving its efficiency through administration by a body of the users, namely, the factories and cultivators.

It emerges from the above that the irrigation and the development of cane in general in Maharashtra is not much of a problem and that the additional requirements are being attended to by the State Government.

(b) *Manures and Fertilizers*

A special feature of manuring in Maharashtra has been the application of Nitrogen in heavy doses. In the earlier days of development applications of Nitrogen upto 500 or even 600 lbs. per acre was not very uncommon. As a result of various manurial investigations carried out at Padegaon, the schedule of Nitrogen manuring in four doses in the form of cake and inorganic fertilizer in 2:1 ratio was drawn up at the rate of 300,375 and 450 lbs. Nitrogen per acre respectively for January, October and *Adsali* plantings. Fairly heavy application of farm yard manure has also been practised by progressive cane growers and factory estates. Green manuring has also become a common practice in sugarcane agriculture. *Sann* and *Dhaincha* are grown for this purpose.

As a result of studies on the economics of manuring done by the Padegaon Research Station, it is now observed that although heavy yields are obtained with heavy manuring this leads to poor quality and high cost of cane production. In an attempt to reduce the cost of manuring, the oil cakes are being replaced with inorganic fertilisers. Reduction of Nitrogen may also be possible with the introduction of more efficient cane varieties. Crop log studies are also undertaken at Padegaon to determine the dose and time of application of the fertiliser according to the needs of the crop, whereby also the fertiliser requirements of the crop can be reduced.

In Maharashtra the application of manures and fertilisers is being done since a long time and the entire needs are being adequately met by the factories and the State Development department.

(c) Cane Seed :

The Central Sugarcane Research Station at Padegaon and four other regional Sub-stations are engaged in the work of testing and releasing suitable varieties for the area. The factories in the private sector till recently had their own cane estates where they maintained seed nurseries to take care of their seed requirements. The Cooperative factories also maintain seed nurseries on the fields of the grower members to ensure supplies of good healthy seed. In this way the seed requirements of the factories in the State are quite satisfactorily met.

2.4 Means of Communications

Table II will show that the information as regards the existing position of communications as received from the factories is incomplete. Fourteen factories only have given their requirements of additional roads which is found to be 1544 Km of *pucca* road and 16 km of trolley line. The cost of making these may be estimated at about Rs. 8·50 crores. The requirements of roads, culverts etc. in other factory areas must also be substantial. It may be inferred, therefore, that there is considerable need for improving communications in the factory areas.

2.5 Duration of season, cane crushed, sugar made and average recovery in Maharashtra factories

The position with respect to average duration of season, cane crushed, sugar produced and average recovery recorded by Maharashtra factories during the preceding thirteen years is as follows :

Year	Average duration (22 hours)	Cane crushed (lac tonnes)	Sugar made (lac tonnes)	Average recovery % cane
1950-51	122	10·12	1·18	11·65
1951-52	151	13·61	1·51	11·12
1952-53	122	11·69	1·35	11·51
1953-54	113	10·43	1·23	11·79
1954-55	144	14·45	1·69	11·68
1955-56	146	16·98	1·98	11·68
1956-57	157	20·78	2·43	11·68
1957-58	166	28·59	3·20	11·21
1958-59	123	27·85	3·21	11·51
1959-60	134	33·90	3·98	11·75
1960-61	166	44·92	5·23	11·65
1961-62	157	42·42	5·08	11·98
1962-63	157	43·48	5·30*	12·19

*Includes raw sugar also.

NOTE:—Some of the factories of existing Mysore and Gujarat States which used to be grouped with this region prior to 1960 have not been taken into account in the above and the subsequent tables.

It will be seen that during the last thirteen years, the average duration (22 hours) has varied from 113 days in 1953-54 to 166 days in the years 1957-58 and 1960-61. The maximum recovery has been 12·19 in 1962-63.

2.6 Sugar production

The position with regard to the number of working factories in Maharashtra, their registered capacity, production of sugar in tonnes and sugar produced per 100 tonnes of registered capacity from 1950-51 to 1962-63 is shown below :

Year	No. of working factories	Total registered cane crushing capacity per day in tonnes	Production of sugar in tonnes	Production of sugar per 100 tonnes registered capacity (tonnes)
1950-51	13	10,287	1,17,943	1,146·5
1951-52	13	10,287	1,51,327	1,471·0
1952-53	13	10,287	1,34,556	1,308·0
1953-54	12	9,982	1,22,979	1,232·0
1954-55	13	10,287	1,68,790	1,640·8
1955-56	14	13,056	1,98,226	1,518·3
1956-57	15	14,072	2,42,777	1,725·2
1957-58	20	19,355	3,20,478	1,655·8
1958-59	25	24,841	3,20,685	1,290·9
1959-60	26	27,076	3,98,358	1,471·2
1960-61	27	28,092	5,23,222	1,862·5
1961 62	27	28,092	5,08,000	1,808·3
1962-63	29	30,836	5,30,228*	1,719·5

*Includes raw sugar also.

सत्यमेव जयते

The maximum production of sugar (including raw sugar) has been 5·30 lac tonnes in the year 1962-63. The production per 100 tonnes registered capacity was minimum (1146·5 tonnes) in 1950-51 when average duration was only 122 days and maximum (1862·5 tonnes) in 1960-61 which was the year of high production. Apart from these years, the production per 100 tonnes registered capacity has generally varied between 1200 to 1800 tonnes.

The consumption of sugar in Maharashtra was about 4·91 lac tonnes in 1962-63. The State is thus surplus by about 39,000 tonnes.

2.7 The age of the factory plants, their capacities and present condition of equipment

The following table gives the age of the various plants, their existing capacities and the actual maximum crushing rate per 24 hrs. operation attained in 1961-62 or 1962-63:

Sl. No.	Name of Factory	Year of Establishment	Age in 1963 (yrs)	Existing daily cane crushing capacity (licensed) tonnes/day 1963-64 season	Actual maximum crushing rate per 24 hours operation attained in 1961-62 or 1962-63 tonnes
1	2	3	4	5	6
1.	Belvandi	1934	29	305	341
2.	Bhawaninagar	1956	13@	813	780
3.	Changdeonagar	1941	22	813	844
4.	Phaltan (Shakharwadi) . . .	1933	30	813	939
5.	Girna	1958	5	1,016	1,121
6.	Phaltan (Shriram)	1957	6	1,016	1,032
7.	Akluj	1962	1	1,016	943 (1962-63 Ist season)
8.	Ashoknagar	1957	6	1,016	1,087
9.	Bhogawati	1958	5	1,016	1,151
10.	Bidri	1962	1	1,016	904 (1962-63 Ist season)
11.	Ganeshnagar	1957	6	1,016	1,153
12.	Gangapur	1958	5	1,016	1,053
13.	Harigaon	1924	21*	1,016	1,234
14.	Ichalkaranji	1958	5	1,016	1,189
15.	Kopergaon	1955	8	1,016	1,170
16.	Lakshmiwadi	1941	39**	1,016	1,145
17.	Malegaon	1957	6	1,016	1,043
18.	Nira	1969	1	1,016	704 (1962-63 Ist season)

1	2	3	4	5	6
19.	Sakarwadi	1939	24	1,016	1,047
20.	Sangli	1958	5	1,016	1,230
21.	Saswadmali	1934	29	1,016	1,048
22.	Tilaknagar	1934	29	1,016	1,210
23.	Warnanagar	1959	4	1,016	1,175
24.	Rahuri	1957	6	1,219	1,056
25.	Ravalgaon	1933	23†	1,219	1,143
26.	Karad	1960	3	1,270	1,272
27.	Shreepur	1939	24	1,321	1,181
28.	Walchandnagar	1933	about 23‡	1,422	1,452
29.	Pravaranagar	1950	7††	1,473	1,301
30.	Kolhapur	1933	5@@	1,727	2,273

@The plant discarded by Pravarnagar (which was installed in 1950) was installed here and hence the age of the present plant is 13 years.

*The plant installed in 1924 was changed in 1942 and hence the age of the present plant is 21 years.

**The plant discarded by Harigaon (which was installed in 1924) was installed here and hence the age of the plant is 39 years.

†The plant installed in 1933 was changed in 1940 and hence the age of the present plant is 23 years.

‡The plant installed in 1933 was changed in nearabout 1940 and hence the age of the present plant is about 23 years.

††The plant installed in 1950 was changed in 1956 and hence the age of the present plant is 7 years.

@@The plant installed in 1933 was changed in 1958 hence the age of the present plant is only 5 years.

In Maharashtra all the private sector factories except Gangapur were established between 1924 to 1941 with small initial capacities *viz.*, 150 to 400 tons per day. Some of these factories subsequently changed their milling plants and installed bigger plants and the remaining are carrying on with their originally installed plants which have gradually been expanded in the course of years. All the cooperative factories have been established after 1949, most of them having a crushing capacity of 1,000 tons per day. Pravarnagar, which is the first cooperative factory of the Deccan started with a small plant of 450 tons which was subsequently replaced by a bigger plant.

It will be seen from the above table that Lakshmiwadi has got the oldest plant being 39 years old. Belvandi, Changdeonagar, Phaltan (Sakharwadi), Harigaon, Sakarwadi, Saswadmali, Tilaknagar, Ravalgaon, Shreepur and Walchandnagar are also old plants being 21 to 30 years old. The plants of the remaining factories have been installed in recent years and are 1 to 8 years old. At present, the distribution in the various capacity ranges is as follows :

Below 800 tonnes	1
Between 800 to 1050 tonnes	22
Between 1051 to 1250 tonnes	2
Between 1251 to 1500 tonnes	4
Above 1500 tonnes	1

As regards the present condition of equipment, as has been mentioned before, eleven plants are old and rest have been installed within last ten years. The older plants are, however, being fairly well maintained.

Table III-A gives important details of the milling plants. It will be seen from this table that all the factories except Saswadmali have got two sets of knives ; these are adequately powered in almost all the cases except Sakarwadi and Shreepur where the powering is slightly on the low side. The mills of all the recently installed plants except Bhawaninagar, Gangapur and Kopergaon are driven by steam turbines whereas those of old factories are driven by steam engines and the installed power of these turbines/engines is adequate in all the factories except Tilaknagar. The plants of about three-fourths of the factories are of 15 or more than 15 rollers.

Table III-B will show that out of 30 factories, 27 are totally semi-electrified and three *viz.*, Belvandi, Bhawaninagar and Phaltan (Sakharwadi) are partially semi-electrified. Belvandi, Phaltan (Sakharwadi), Harigaon, Saswadmali, Ravalgaon and Kolhapur have boilers of 160 p.s.i.g. working pressure, Changdeonagar and Walchandnagar also have some of their boilers of 160 lbs. working pressure (rest of their boilers being 240 and 384 lbs. pressure respectively). Of the remaining factories, five have got boilers of 200 p.s.i.g. working pressure and as many as 15 factories have boilers of 250 lbs. or above working pressure. As regards heat economy measures, all the factories except Ashoknagar, Ganeshnagar, Harigaon, Malegaon, Nira, Rahuri have got economizers (though in some of them H.S. is not adequate). and except five [*viz.* Belvandi, Bhawaninagar, Changdeonagar, Phaltan (Sakharwadi) and Malegaon] all the factories have got superheaters.

As regards the equipment in the boiling house, Tables III-C i, ii, iii and iv will show that out of 30 factories, four factories, *viz.*, Belvandi Bhawaninagar, Malegaon and Rahuri have still got juice measuring tanks, one factory, *viz.*, Walchandnagar has manually operated weighing equipment and the rest twentyfive factories have automatic weighing scales ; all the factories have got vertical juice heaters (Lakshmiwadi has got a few horizontal juice heaters also) ; only Lakshmiwadi and Sakarwadi have got vapour line juice heaters ; fourteen factories *viz.*, Belvandi, Chang deonagar, Phaltan (Sakharwadi), Girna, Ashoknagar, Bhogawati, Gangapur, Harigaon, Ichalkaranji, Malegaon, Saswadmali, Tilaknagar, Warnanagar and Shreepur have batch sulphitation tanks ; except Bhawaninagar all have got continuous settlers and except three factories *viz.*, Belvandi, Bhawaninagar and Shreepur, all have got continuous rotary vacuum filters ; only six factories *viz.*, Bhawaninagar, Kopergaon, Tilaknagar, Rahuri, Shreepur and Pravaranagar have got pre-heaters and vapour cell is absent in all but three factories *viz.*, Saswadmali, Shreepur and Kolhapur ; all the factories have got quadruple or quintuple effect evaporators and about 75 per cent of the factories are practising vapour bleeding ; Belvandi, Harigaon and Shreepur still have coil pans to the extent of 39, 16·5 and 25 per cent of their total pan capacity respectively ; all the factories except Belvandi have got water cooled crystallizers for low grade massecuite and all except five *viz.*, Belvandi, Bhawaninagar, Phaltan (Sakharwadi), Harigaon and Shreepur have got high speed centrifugals twenty of them having all of their centrifugals of high speed and five having high speed as well as ordinary centrifugals.

2.8 Working results

The data with respect to (i) cane quality (ii) time account, (iii) recovery and total losses and (iv) fuel consumption are given in Table IV-A i, ii & iii, IV-B i & ii, IV-C i, ii and iii, IV-D i & ii respectively.

It will be seen from Table IV-A i, ii & iii that the average seasonal pol per cent cane in the last four years has generally varied from 13·02 to 15·30 with primary juice purity variation from 83·17 to 89·73. Fibre per cent cane is in general around 10·8 to 13·0 though in some years and in some factories it has been around 9·8 per cent and 14·0 per cent also.

Table IV-B i & ii show the time account. It will be seen that the duration of season has generally varied between 124 days to 213 days with maximum duration in 1960-61 in almost all the factories. The number of hours lost to total available (leaving the first season of new plants) have been quite high *viz.*, 17 to 41 per cent in case of Bhawaninagar, Girna, Bhogawati, Gangapur, Ichalkaranji, Sangli, Saswadmali, Warnanagar, Ravalgaon, and Shreepur. In the remaining factories this figure has generally varied between 10·0 to 20·0 per cent. In general time loss has been on a bit high side in all the factories except Harigaon.

Tables IV-C i, ii & iii show the position of recovery and total losses. It will be seen that with the exception of one or two seasons in case of a few factories, all the factories have registered the recoveries of above 11 per cent. The factories which have had comparatively better recoveries are Kolhapur, Walchandnagar, Warnanagar, Sangli, Malegaon, Harigaon, Ichalkaranji, Ashoknagar, Phaltan (Shriram) and Phaltan (Sakharwadi). Of these, Warnanagar, Kolhapur, Malegaon and Phaltan (Shriram) have had recoveries of the order of 12·0 to 13·4, Sangli 11·6 to 13·0 and the remaining factories 11·7 to 12·6. All the factories follow the sulphitation process of juice clarification.

As regards total losses, these have generally varied between 1·82 to 2·33 per cent in Changdeonagar, Phaltan (Sakharwadi), Phaltan (Shriram), Harigaon, Ichalkaranji, Saswadmali, Warnanagar, Walchandnagar and Kolhapur, 2·01 to 2·60 per cent in Bhawaninagar, Girna, Ashoknagar, Bhogawati, Ganeshnagar, Malegaon, Sangli, Rahuri, Ravalgaon and Shreepur and 2·40 to 3·13 per cent in Belvandi, Gangapur and Kopergaon. Changdeonagar has recorded the lowest losses *viz.*, 1·93 to 2·05 per cent and Gangapur the highest *viz.* 2·35 to 3·13. In the matter of reduced overall extraction the number of factories in the various efficiency groups are as follows (for 22 factories only because of 24 factories which have submitted data, two factories had their trial season in 1962-63) —

Reduced overall extraction	No. of factories
80-82	2
82·01-85	12
above 85	8

It will thus be seen that two factories viz., Belvandi and Bhawaninagar have poor overall efficiency, twelve factories have medium efficiency and eight factories have recorded very good overall efficiency.

From Tables IV-D i & ii will be seen the position with regard to fuel consumption. In Maharashtra, almost all the factories consume more or less extra fuel partly due to low fibre content in the sugarcane. The factories which have consumed nominal extra fuel of the order of 0·2 to 2·7 per cent cane (in terms of bagasse) are Phaltan (Sakharwadi), Phaltan (Shriram), Saswadmali and Shreepur. In Changdeonagar, Ashoknagar, Harigaon, Kopergaon, Rahuri, Walchandnagar and Kolhapur, the extra fuel consumption has generally varied between 0·1 to 4·0 per cent, in Girna Ganeshnagar, Ichalkaranji, Warnanagar and Ravalgaon 2·5 to 6·7 per cent and the remaining factories have had extra fuel consumption of the order of 4·7 to 13·0 per cent. The factories in which the time loss has been higher have generally consumed more extra fuel.

Table V gives particulars of the existing daily cane crushing capacities of the factories, specifications of their existing milling tandem, expansion for which license has been already granted and expansion as asked for by the factories. Financial requirement for expansion and/or modernisation as communicated by the factories is also given.

2.9 Labour strength and productivity

Table VI-A shows the labour strength actually employed in Maharashtra factories, the labour considered surplus at present and the labour that would become surplus when schemes of expansion/modernisation become effective.

It will be seen that out of 22 factories which have submitted data in this regard, one factory has reported that it has not determined this aspect, two factories *viz.*, Bhogawati and Kolhapur have estimated that 45 workers are surplus under the existing conditions in case of former and 84 workers in case of latter. As regards the surplus labour after expansion/modernisation, Girna has reported that approximately 5 per cent workers would be rendered surplus and five more factories *viz.* Bhawaninagar, Phaltan (Sakharwadi), Harigaon, Saswadmali and Ravalgaon have estimated that in all 222 workers would become surplus.

Table VI-B shows the productivity of each factory in terms of man days per tonne of sugar for four years. It will be seen that in all the factories the productivity has been reasonable *viz.* 2·6 to 10·4. The factories which have had better productivity of the order of 2·6 to 5·5 man days per tonne of sugar are Changdeonagar, Harigaon, Sangli and Walchandnagar.

2.10 Utilisation of by-products

Tables VII-A, VII-B and VII-C show the position with respect to the utilisation of by-products.

Bagasse

It will be seen that most of the factories have consumed their entire bagasse as fuel. In this area the bagasse production is generally low on account of the lower fibre content of cane. A few factories have, however, saved some quantities of bagasse.

Several factories in the State are however considering scheme of putting up industries based on bagasse by substituting furnace oil or coal for bagasse for fuel purposes. Cheaper coal supplies are expected from the coal mines recently explored near Nagpur.

In the late forties Walchandnagar Industries put up an experimental plant for the manufacture of paper from bagasse and cane trash. The extensive trials established the fact that coarse papers such as packing paper and corrugated board could be made even from cane trash.

The utilisation of bagasse for the manufacture of paper depends entirely on the availability of cheap substitute fuels. The availability of the latter and the development of transport will determine the future of this by-product industry.

Molasses

From the returns received from 24 factories of the State it is seen that the average molasses production (average of five years) was 115,860 tonnes.

Of this about 17,500 tonnes is reported to have been destroyed. Several distilleries exist in the State and recently a distillery of 11,000 gallons daily production capacity has been established in the Public Sector at Chitalenagar. The Sangli factory has also started a distillery with a capacity of 12·6 lac gallons of industrial alcohol per year and have further a project of alcohol-based industries like polythelene, ethyl acetate and acetone.

Molasses has not yet found full utilisation in the State and there is therefore scope for more distilleries and alcohol-based industries to come up. Transport of molasses has hitherto been a problem but with the development of better transport, this problem is getting gradually solved.

With the increasing production of raw sugar, the utilisation of molasses for cattle feed purposes could also be made.

Alcohol-based Industries : Following a decision by the Development Council for the Alcohol Industry to control the price of molasses and alcohol at a low level so as to encourage the growth of alcohol-based industries, a number of projects were submitted to the Development Wing of the Ministry of Commerce & Industry, and almost all were approved. As a result Somaiya Organo-Chemical Ltd., (a subsidiary of Godavari Sugar Mills Ltd.) put up an acetic acid plant integrated with the existing distillery at Sakarwadi. This plant went into regular production during the last quarter of 1961 and consumes almost the entire production of the distillery. There are already plans in hand to extend the distillery to meet the full requirement of the planned capacity of the acetic acid plant. A 5-ton dry ice plant is also proposed to be put up.

A project to manufacture butyl alcohol, butyl acetate and ethyl acetate is being put up by Kolhapur Sugar Mills Ltd., at their distillery at Kolhapur. The alcohol produced by the Chitale Distillery of the Maharashtra Government is all supplied to the Trombay plant of Union Carbide (India) Ltd., for the manufacture of polythene, organic chemicals and solvents. Another acetic acid plant is expected to be installed by Chika Private Ltd., in the neighbourhood of Bombay.

Citric Acid from Molasses : Yet another important development for the utilisation of molasses has been the citric acid plant at Nasik (details are not available). Rahuri has also proposed a citric/acetic acid plant of 5-ton capacity at a cost of Rs. 40 lacs. Ravalgaon Sugar Farm Ltd. have been using the entire molasses as fuel in boilers with specially designed molasses burning furnaces.

Press-mud

Most of the factories have reported having consumed almost the entire production of their press-mud as manure on their own sugarcane farms or the growers' farms. Ravalgaon is working a wax extraction plant and utilising the press-mud after wax extraction as manure. Rahuri and Sangli factories are now proposing to have wax extraction plants of 5-ton capacity each.

3. ECONOMIC ASPECTS

3.1 Financial set-up

The nature of ownership, the share capital, the reserve and net worth of 30 Maharashtra sugar factories as given in their balance sheets for 1961-62 are as follows :—

(in lacs of Rupees)

Name of Unit	Paid up capital			Reserves	Total net worth
	Original	Bonus issues	Total		
1	2	3	4	5	6
Private Ltd.					
1. Belvandi	4·02	22·68	26·70	15·38	42·08
Public Ltd.					
1. Changdeonagar . .	7·50	30·00	37·50	28·94	66·44
2. Phaltan (Sakharwadi) .	10·00	40·00	50·00	49·87	99·87
3. Gangapur	60·88	..	60·88	..	60·88
4. Harigaon	18·80	51·70	70·50	163·11	233·61
5. Lakshmiwadi 6. Sakarwadi } . .	28·51	50·00	78·51	135·85	214·36
7. Sasawadmali . . .	48·81	..	48·81	25·70	74·51
8. Tilaknagar . . .	10·00	62·50	72·50	52·10	124·60
9. Ravalgaon*					
10. Shreepur	28·34	..	28·34	61·35	89·69
11. Walchandnagar*					
12. Kolhapur . .	7·12	21·37	28·49	100·84	129·33
TOTAL	219·96	255·57	475·53	617·76	1,093·29
Co-operatives					
1. Bhawaninagar . .	28·16	..	28·16	4·49	32·65
2. Girna	32·55	..	32·55	1·66	34·21
3. Phaltan (Shriram)*					
4. Akluj	27·80	..	27·80	0·07	27·87
5. Ashoknagar . . .	43·22	..	43·22	5·15	48·37
6. Bhogawati . . .	36·38	..	36·38	22·16	58·54
7. Bidri	31·93	..	31·93	0·10	32·03
8. Ganeshnagar . .	42·30	..	42·30	4·35	46·65
9. Ichalkaranji . . .	32·67	..	32·67	6·92	39·59
10. Kopergaon . . .	49·76	..	49·76	6·50	56·26
11. Malegaon . . .	36·58	..	36·58	3·67	40·25
12. Nira**					
13. Sangli	34·79	..	34·79	22·04	56·83
14. Warnanagar . . .	29·80	..	29·80	29·51	59·31
15. Rahuri	45·75	..	45·75	3·61	49·36
16. Karad	47·78	..	47·78	2·64	50·42
17. Pravaranagar . . .	39·17	..	39·17	38·79	77·96
TOTAL	558·64	..	558·64	151·66	710·30
GRAND TOTAL	782·62	278·25	1060·87	784·80	1,845·67

*Balance Sheets not received.

**New Factory.

It will be seen that out of the share capital of Rs. 10·61 crores, Rs. 2·78 crores has been subscribed as bonus shares, the remaining amount of Rs. 7·83 crores being the originally paid up capital. At the close of the 1961-62 year, a sum of Rs. 7·85 crores was also available in reserves bringing the value of total net worth to Rs. 18·46 crores. Thus the profits so far retained by the Maharashtra sugar industry in the form of bonus shares and reserves aggregate to Rs. 10·63 crores which means an addition of 135·8 per cent to the initially paid up capital.

Financial analysis* has been made by this Committee for the years 1953-54, 1957-58 and 1961-62 on the basis of Balance Sheets received from sugar factories and the results are shown below :—

(Amount in lacs of Rupees).

Particulars	1953-54	1957-58	1961-62	Comparative development	
				1957-58 over 1953-54	1961-62 over 1957-58
1	2	3	4	5	6
1. No. of units . . .	9**	19†	26‡	+10	+7
2. Gross block . . .	716·17	1,876·69	3,465·30	1,160·52	1,588·61
3. Accumulated depreciation .	351·31	538·27	1,232·85	186·96	694·58
4. Net block	364·86	1,338·42	2,232·45	973·56	894·03
5. Net worth . . .	452·70	1,002·10	1,845·67	549·40	843·57
6. Surplus of net worth over net block . . .	87·84	(—)336·32	(—)386·78	(—)424·16	(—)50·46
7. Debentures & long term loans	18·46	416·26	812·00	397·80	395·74
8. Available resources . .	106·30	79·94	425·22	(—)26·36	345·28
9. Investment . . .	34·16	52·08	88·62	17·92	36·54
10. Investment as % of surplus net worth . . .	38·9	..	..		
11. Net block as % of gross block	50·9	71·3	64·4		

सत्यमेव जयते

*Similar to the analysis made by the Tariff Commission in paragraph 15·5 of their report on the cost structure of sugar (1959) for the year 1953-54 and 1957-58.

**The actual No. of working factories was 12, and excludes Ravalgaon, Walchandnagar and Tilaknagar factories who have not furnished Balance Sheets.

†The actual No. of working factories was 20. Excludes Ravalgaon, Walchandnagar, Tilaknagar and Phaltan (Shriram) factories who have not furnished Balance Sheets and includes Bhogawati, Sangli and Ichalkaranji factories which were under construction and have furnished Balance Sheets.

‡The actual No. of working factories was 27. Excludes Ravalgaon, Walchandnagar, Phaltan (Shriram) factories who have not furnishd Balance Sheets and include Bidri and Akluj factories which were under construction and have furnished Balance Sheets.

It will be seen that at the close of 1961-62 as against Rs. 22·32 crores net block, the net worth of the industry was Rs. 18·46 crores only indicating a shortfall of Rs. 3·87 crores. A sum of Rs. 8·12 crores was obtained by the industry by way of debentures and long term loans, thus augmenting its total available resources to Rs. 4·25 crores. The industry also invested a sum of Rs. 0·89 crore in the form of shares and debentures of associate and other companies and in Government securities, leaving a sum of Rs. 3·36 crores to be used mostly as working capital.

These figures are indicative of the development that has taken place during the last eight years. It will be seen that there has been remarkable growth in the sugar industry in this part of the country. During the period of four years ending 1957-58, the industry has made a gross investment in fixed assets of the order of Rs. 11·61 crores out of which Rs. 3·98 crores were financed through long term borrowing. There was further development in the industry during the period of next four years and the gross block increased by Rs. 15·89 crores. A sum of Rs. 8·44 crores was raised from internal resources by expanding the share capital and reserves and Rs. 3·96 crores were raised through additional long term borrowings. The plant and machinery of the industry has depreciated to Rs. 12·33 crores up to 1961-62 and the net block stood at Rs. 22·32 crores which was 64·4 per cent of the gross block.

The foregoing analysis would show that on the whole there has been very good effort towards the development of the industry in Maharashtra during recent years.

3.2 Profit and loss position

The profit and loss position as revealed from Balance Sheets of the Maharashtra sugar factories for the last 10 years is given in Table VIII-A and it would generally indicate the financial position of the industry. It will be seen from the Table that on the whole there have been good profits each year in case of all the factories except some of the newly established factories. The average profit during the entire period of 10 years works to Rs. 6·57 lacs per year per factory after deduction of income tax. Generally the new factories incur loss or make low profits in the initial years due to lower crush, higher fuel consumption, higher depreciation, lower recovery etc. The establishment of a large number of new factories in Maharashtra has, therefore, affected the average profitability of the factories. The profitability of old and new factories is shown below separately :

(In lacs of Rupees)

Year	Old Factories Profit (+) or Loss(—)			New Factories Profit (+) or Loss (—)		
	No.@	Total	Average per factory	No.@	Total	Average per factory
1952-53 . . .	11	74·85	6·80	..	..	..
1953-54 . . .	11	78·88	7·17	..	..	..
1954-55 . . .	11	88·35	8·03	..	..	..
1955-56 . . .	11	87·96	8·00	1	(—) 0·98	(—)0·98
1956-57 . . .	11	170·35	15·49	2	(+) 6·04	(+)3·02
1957-58 . . .	11	133·74	12·16	6	(+) 7·00	(+)1·17
1958-59 . . .	10*	96·13	8·74	10	(—)26·27**	(—)2·63
1959-60 . . .	11	145·45	13·22	11	(—) 9·74	(—)0·89
1960-61 . . .	11	149·19	13·56	14	(—)38·04	(—)2·72
1961-62 . . .	11	119·12	10·83	14	(+)14·61	(+)1·04
		(+)1,144·02	(+)10·50		(—)47·38	(—)0·82

@No. of factories supplying profit and loss figures.

*Data for Tilaknagar not available.

**Rs. 23·08 lacs loss was sustained by Gangapur factory only.

It will be seen that average profit made by the old factories during the 10 year period is of the order of Rs. 10·50 lacs as against average loss of Rs. 0·82 lacs incurred by new factories.

Table VIII-B is based on a study of profit or loss made by factories in various capacity slabs during the two periods of five years each *viz.* 1952-53 to 1956-57 and 1957-58 to 1961-62 and also for the entire period of 1952-53 to 1961-62. The position is summarised below :—

	1952-53 to 1956-57	1957-58 to 1961-62	1952-53 to 1961-62
(*I*) *Factories incurring loss*			
Number	..	8	8
Average loss per year per factory (Lacs of Rs.)	..	4·01	4·01
(*II*) *Factories making profit*			
Number	13	17	17
Average profit per year per factory (Lacs of Rs.) .	8·71	8·23	8·43
(*III*) *Total*			
Number	13	25	25
Average profit or loss per year per factory (Lacs of Rs.)	(+)8·71	(+)5·42	(+)6·57

It will be seen that in the second five year period, 8 factories (mostly newly established cooperatives) incurred loss and the remaining made an average profit of Rs. 8·23 lacs per year per factory. In the entire period of 10 years, the Maharashtra sugar factories made an average profit of Rs. 6·57 lacs per year per factory.

Table VIII-C shows the dividends paid by Maharashtra sugar factories since 1952-53. It will be seen that, on the whole, good profitability has enabled most of the old factories of Maharashtra to declare handsome dividends each year on the ordinary paid up capital.

4. SPECIFIC PROBLEMS OF THE FACTORIES

1. Belvandi

1. Scarcity of water for irrigation as the factory is situated in a famine area.

2. Stabilisation of the factory is linked with the completion of Ghod Project and its irrigation canal.

2. Bhawaninagar

1. Inadequate *pucca* roads in the factory zone.

3. Changdeonagar

1. Their cane supply position had become very bad since the installation of cooperative factories in close proximity and the absence of reserved zones.

2. Area of operation allotted to Ganeshnagar Factory completely surrounds the area which used to supply cane to this factory. Even the village Puntamba where this factory is situated is within Ganeshnagar's zone of operation and their area is being encroached.

3. Further extension of Ganeshnagar Factory will still more aggravate the situation.

4. Phaltan (Sakharwadi)

1. Their cane supplies have been very seriously affected by the establishment of Phaltan (Sriram) and Nira Cooperative factories very close to their site. These factories are further encroaching upon their cane area.

2. The factory had a big mechanised farm which has been taken over under the Land Ceilings Act.

3. Up to now Padegaon Research Farm cane had been purchased by this factory but now Nira factory is encroaching upon this cane and is trying to get the entire Padegaon cane.

4. Insufficient water supply for irrigation.

5. High rates of *gur* and diversion of cane for *gur* manufacture.

5. Girna

1. Insufficient assured water supply.
2. Diversion of cane for *gur* manufacture.
3. Lack of *pucca* main and feeder roads.

6. Ashoknagar

1. Bad condition of roads.
2. Diversion of cane for *gur* manufacture.
3. Well water supply is inadequate during the hot season.

7. Bhogawati

1. Bad roads.
2. Diversion of cane for *gur* manufacture.

8. Bidri

1. Mostly there is lift irrigation and there are no flow irrigation projects. Great difficulty is felt during the hot months of March to May as the rivers go dry.

2. There is abnormal reduction in recovery after March due to the dry spell. Also, due to monsoon, season can not be started in October. These factors put in a limitation to the duration of season from November to March. Present capacity is insufficient to finish all the cane during this period.

9. Ganeshnagar

1. The chronic shortage of well water is a great obstacle for extension of cultivation and also in increasing the per acre yield in the area under cane plantation.

2. No development plan is taken up at present because financial help from the Government is not available.

10. Gangapur

1. Main difficulty is lack of flow irrigation. Cane is grown by well irrigation and is often harvested before maturity due to scarcity of water as rainfall is scanty.

2. Due to irrigation difficulties, the available cane within a radius of 15 miles of the factory is only about 20,000 tonnes. Balance of purchases have to be made from long distances (50 to 60 miles).

3. Roads are inadequate and in very bad condition.

4. Plant cane is planted only after January due to water difficulties and this planting goes on till about the end of March. *Adsali* cane is, therefore, not grown.

5. Recently, the cooperative factories have been enrolling members from amongst the cultivators who till now were supplying the cane to this factory.

6. The factory owns about 4,200 acres of cultivable land and the State Government is likely to take it over under the Land Ceilings Act.

11. Harigaon

1. The co-operative sugar factories are issuing fresh shares to the cultivators who have already contracted their cane to the factory on a long term basis.

2. Unnecessary cross transport of the cane from the area of one factory to another due to absence of reserved zones.

3. Ceiling on the factory farms.

12. Ichalkaranji

1. Paucity of *pucca* roads.

13. Kopergaon

1. Inadequate roads.

14. Lakshmiwadi

1. The cane supply position of the factory had become very serious due to following :

(*a*) Starting of a new co-operative sugar factory *viz.* Sanjivani (Takli) at Kopergaon, in spite of shortage of cane for the existing factories.

(*b*) Steady enrolment of members by neighbouring co-operative factories in anticipation of expansion in spite of decision for maintaining *status quo* by Zonal Committee.

(*c*) Insistence by these co-operative factories on their members to supply their entire cane to them whether linked to shareholders or not.

2. In the Kopergaon taluka, there had been a shortage in the overall cane production during past 4 years due to diversion of the area under cane to cotton and grape cultivation which are shorter duration crops and give better returns.

3. On account of the above reasons, the cane supplies to the factory have fallen to the level of uneconomic crush.

15. Malegaon

1. Existing cane crushing capacity is not sufficient for crushing all the available cane.

16. Nira

1. Diversion of cane for jaggery manufacture due to high prices of Jaggery.

2. Lack of *pucca* roads.

17. Sangli

1. With the existing crushing capacity, the factory is not in a position to crush all the available cane.

18. Saswadmali

1. Short supply of cane. The situation has become more acute since the installation of Akluj factory at a distance of only about 4 miles.

2. At present, the area for which water has been guaranteed by the Government is only 1,600 acres which is less. Irrigation for at least 800 acres more should be guaranteed.

19. Warnanagar

1. Improper road condition particularly in the interior parts.

2. Diversion of cane for *gur* manufacture.

3. Diversion of gate cane to other neighbouring factories.

20. Rahuri

1. Only 20 per cent of the area is on flow irrigation (Canal) and rest is irrigated on wells by lifting water by oil engines. There is at times short supply of water due to scarcity of rainfall.

21. Ravalgaon

1. In 1958-59 Girna co-operative factory was established in the vicinity of the factory's cane estate and ever since their cane supplies have dwindled and the factory had to procure cane from far away areas at increased ton-mile expense. This co-operative factory (Girna) had also forcibly diverted the factory's contracted cane from the growers.

2. Shortage of irrigation water.

3. Diversion of cane towards *gur* manufacture.

4. More acreage is going under cotton on account of better returns.

22. Karad

1. Taking into consideration the future trends they think that their present plant of 1,000 tons capacity, would become uneconomic merely on account of its size and therefore needs to be expanded to at least 2,000 tons crushing capacity.

23. Shreepur

1. Diversion of cane for *gur* manufacture in the years of high *gur* price.

2. Due to there being no reserved zones and the coming up of Akluj factory at a distance of only 12 miles, their cane supplies have been much affected.

3. Lack of *pucca* roads.

4. Present irrigation quota sanctioned by the Irrigation Department is at 115 acre-inches, which falls short.

5. In the factory area they have got 1,450 acre blocks under irrigation for 8 months only. Perennial irrigation *i.e.*, irrigation for 12 months is lacking at present.

6. Taking over of factory farms under the Land Ceiling Act has very much affected their cane position.

24. Walchandnagar

1. Co-operative factories established at Bhawaninagar and Akluj have affected their cane availability.

2. Supply of cane is affected by diversion to *gur* in the years of high *gur* price.

3. Factory's farm which was supplying major quantity of cane to the factory has been taken over under the Land Ceilings Act.

4. Short supply of water to areas below Distributory 46 Nira Left Bank Canal.

25. Kolhapur

1. Bad roads.
2. Competition from *gur* prices.

सत्यमेव जयते

5. RECOMMENDATIONS

A study of the foregoing chapters would indicate that the Maharashtra region possesses tropical climate. The soil though not generally very fertile has good drainage characteristics and given the irrigation and manurial requirements, the sugarcane grows in the region extremely well. The yields per acre are high and the cane quality is also good. The yield of sugar per acre recorded in this State compares favourably with those of some of the most advanced sugar producing countries of the world, namely, Hawaii, Australia, Indonesia etc. Commercial exploitation of the sugarcane crop for manufacture of white sugar, however, is of recent origin and dates back to the years in which schemes of perennial irrigation like the Girna, Nira and Deccan Canal systems came into existence. The development of the industry in the earlier years took place on rational lines inasmuch as entrepreneurs who established sugar factories put in considerable efforts to develop sugarcane areas in compact form around their factories. They developed farms of their own in which mechanised cultivation was carried out under the supervision of duly qualified agricultural experts. The State Sugarcane Research Station at Padegaon simultaneously made significant contributions in developing, propagating and maintaining suitable varieties of sugarcane and on advising optimum requirements of the sugarcane crop with respect to irrigation and manurial treatments based on different soil conditions. The tempo of sugarcane development in factory farms was also caught up by the private cane cultivators who were also assisted by the factory in developing their sugarcane crops.

In view of these conditions, there has been a steady and steadily growing production of sugarcane in the region and the fortunes of the industry have not fluctuated with the fluctuations of cane supplies as in some other States. Added to the above advantages the sugar factories which came up in the State in the earlier years have enjoyed considerable margin of freight advantage and have, therefore, been able to lay by handsome profits. Most of them have, therefore, ploughed back some of their profits for extending the capacity of their plants as well as effecting modernisation.

Of the 30 factories which existed in 1962-63, only twelve plants are old and all the rest are new being 1 to 8 years old. The recoveries being high and most of the plants being modern with very low labour load, the productivity of the factories in this region is very high; the highest in the country.

Profitability being good and pressure on land not being high and the cultivators' holdings also not being very small, the sugar industry has brought all round prosperity to the region. This has naturally led to the development of the co-operative enterprise such that out of 33 factories now in existence as many as 20 are co-operatives. Several of these new factories have, however, been established too close to the previously existing factories and there is already a scramble for cane in most of them.

As regards technical efficiency of the sugar factories in the State, only a few have recorded high efficiency and most of them are having average efficiency. This is because a large majority of the plants are new.

As to the utilisation of by-products, the State being low fibred area the factories do not generally save bagasse. Even so some of the modern factories are saving bagasse in small quantities. The factories are, nevertheless, thinking of developing industries, based on bagasse on the basis of substituted fuel.

Molasses, however, is not being utilised fully and there is considerable scope for development of alcohol based industries.

From the above review it is clear that sugar industry in Maharashtra has a high productivity both in the field and the factory as also a high level of profitability. The factories cannot therefore be categorised as uneconomic at present. Only a few factories are old and need modernisation in some respects. The Industry by and large also felt that their economic position did not warrant any investigation by this Committee.

The Committee's terms of reference are, however, quite broad based. The Committee's efforts had to be directed not only to look to the economically weakest units of the industry but to look to the problems of all the sections of the industry with a view to evolving long range policies for stabilised and economic production and to introduce a sense of economy at every stage of sugar production. The economic nature of a unit being only a relative term which changes with time, it was necessary to examine the problems and find remedies to ensure that the economic units do not become uneconomic due to lack of long range planning. Whatever scope there could be to reduce cost of production should be looked into.

The studies by the Committee have been revealing. The problems of the industry even in this State are many and increasing. The organisational set up on the farm side has changed. The factory owned farms have been taken over under the Land Ceilings Act by the Maharashtra State Farming Corporation. On the factory side almost all the new units, put up in recent years are in the co-operative sector. The new factories in several cases have been located very close to the older units. This has resulted in a great scramble for cane with the result that both the old and the new factories are tending to become uneconomic on account of shortage of cane.

As the productivity in Maharashtra is already at a high level the only manner in which the economic nature of sugar factories in this region can be further improved, is by expansion of capacity of the new units and modernisation and expansion of old units. The need for ensuring adequate cane supplies to the units by solving the present difficulties and shortcomings is inescapable.

1. Rehabilitation, modernisation and expansion

Only a few of the old factories need modernisation in certain respects. Most of them have asked for expansion. There is only one factory (Belvandi) which is of a very small capacity but which holds a license for increasing its capacity to 1,000 tons. It is however, unable to implement it because of lack of cane. The development of its cane area is dependent on the completion of the Ghod irrigation project. It will, therefore, have to wait.

As regards the expansion of other factories the extent of expansion to be allowed will depend upon the cane supplies available. There is already a scramble for cane as will be evident from the following position brought to the notice of the Committee.

Names of factories whose supplies are affected by each other

Harigaon	Ashok, Pravara
Shreepur	Akluj
Changdeonagar	Ganeshnagar
Phaltan (Sakharwadi)	Phaltan (Shriram), Nira
Walchandnagar	Bhawaninagar
Ravalgaon	Girna
Saswadmali	Akluj
Warnanagar	Neighbouring factories
Lakshmiwadi	Sanjivani

Any expansion of existing units with a view to improve their profitability will have therefore, to be very carefully undertaken so that the expansion will synchronise with increased availability of cane and not at the expense of existing units.

The high profitability and better financial position in this State may enable factories to take the costly step of complete replacement of the milling plant by bigger sizes. Thus the limit of existing units may not become the criterion, for expansion. The more important criterion in these cases appears to be the cane potential. Since the productivity level is high, there may not be any miraculous development towards much higher productivity. Increased areas under cane would depend on development of irrigation resources, which would necessarily involve time. Therefore, while the Committee has worked out the needs of each factory in respect of modernisation and expansion from the point of view of utilising the full potential of the existing milling plants, actual recommendations in regard to expansion will have to be based on a careful scrutiny of the cane supply potential of each factory without affecting that of the other. The recommendations of the Committee in the light of the above observations are as follows :

Sl. No.	Name of Factory	Existing daily cane crushing capacity (tonnes) 1963-64 season	Capacity up to which extension license already granted (tonnes)	Expansion as asked for by the factories (tonnes)	Expansion as recommended by the Committee (tonnes)
1	2	3	4	5	6
1.	Belvandi	305	1,000	1,000	1,000
2.	Bhawaninagar	813	1,250	1,250	1,250*
3.	Changdeonagar	813	..	1,250	1,250
4.	Phaltan (Sakharwadi)	813	1,500	..	1,500
5.	Girna	1,016	..	..	Balancing only
6.	Phaltan (Shriram)	1,016	1,200	1,200	1,200
7.	Akluj	1,016	..	Data not supplied by the factory	
8.	Ashoknagar	1,016	1,500	2,000	1,500
9.	Bhogawati	1,016	1,250	1,300	1,250
10.	Bidri	1,016	..	1,600	1,600
11.	Ganeshnagar	1,016	1,250	1,250	1,250

सत्यमेव जयते

1	2	3	4	5	6
12.	Gangapur	1,016	..	Data not supplied by the factory	
13.	Harigaon	1,016	1,500	2,000	1,800
14.	Ichalkaranji	1,016	1,500	2,000	1,500
15.	Kopergaon	1,016	..	2,000	1,800
16.	Lakshmiwadi	1,016	..	1,500	1,500
17.	Malegaon	1,016	1,500	1,500	1,500
18.	Nira	1,016	..	1,500	1,500
19.	Sakarwadi	1,016	..	Data not supplied by the factory	
20.	Sangli	1,016	2,600	3,000/ 3,500	2,600
21.	Saswadmali	1,016	..	1,200	1,200
22.	Tilaknagar	1,016	1,700	1,700	1,700
23.	Warnanagar	1,016	1,500	2,000	1,500
24.	Rahuri	1,219	1,500	3,000	1,500
25.	Ravalgaon	1,219	..	..	Balance-ing only
26.	Karad	1,270	1,750	2,000	1,750
27.	Shreepur	1,321	..	..	Moderni-sation only
28.	Walchandnagar	1,422	1,750	1,778	1,750
29.	Pravaranagar	1,473	2,000	2,000	2,000
30.	Kolhapur	1,727	2,200	3,000	3,000
	TOTAL .	31,699			45,004

*Factory has reported that a new plant of 1270 tonnes capacity is under erection at a cost of Rs. 85·0 lacs.

The Committee has estimated the total cost of rehabilitation, modernisation and expansion for the above factories (26) as Rs. 10·1 crores.

The above expansions will have to be realised by more intensive development of cane in the specified areas of operation of each factory.

Some of the factories have claimed expansion as their present capacities are inadequate to finish the available cane during the optimum season. While the basis of such claim is justified, appreciation will have to be given to the possibility of increased diversion of cane from the normal supplies of the neighbouring factories. One of the ways of overcoming this possibility is to fix quotas of sugar production to the units. In so far, as in Maharashtra, the area and availability of cane can be assessed with a fair degree of reliability, such quota fixation should be practicable.

2. Cane supplies

From the discussions which the Committee had with representatives of sugar factories in Maharashtra, it appeared that most of them were suffering from inadequate supplies of cane. In order to avoid the scramble for cane the State Government had appointed a Zonal Committee for the purpose of defining the areas of operation of each factory. This Zonal Committee had only held two meetings till the time of our visit and no decision had been taken in the matter of defining the zones. It had, however, decided to maintain the *status quo* with regard to cane supplies and the co-operatives had been advised not to enroll fresh members till the question of zoning had been decided. This advice had, however, not been followed by some factories. It was pointed out that this uncertain situation was affecting the position of some of the factories very adversely. The Committee is of the view that the absence of earmarked zones is not in the interest of the healthy growth of the industry in the State, and hopes that the Zonal Committee would take an early decision in the matter.

It has further been brought to the notice of this Committee that the supplies of cane from the farms taken over from the factories under the Land Ceilings Act had been agreed to be supplied only to the respective factories which owned them but in some cases some cane out of these farms had been supplied to other factories also. The Committee hopes that the State Government would look into such cases, if any. Another complication in the matter of cane supplies to the factories that has been presented before this Committee is the disparity in cane price paid to growers by the co-operative and the joint stock factories. While the joint stock factories pay the ex-factory price decided by the Government, the co-operative factories give the price ex-field; the factories meeting the harvesting and transport charges. The co-operative factories are able to do this because the shareholders themselves are growers of cane. In other words by this procedure they are paying the harvesting and transport charges from out of the factory profits. This is not possible with the joint stock companies as the growers of sugarcane are different from the shareholders of the factories. The consequence of this situation is that the normal cane supplies of the joint stock companies are getting rapidly diverted to the co-operative sugar factories directly or indirectly. So long as this disparity in payment for cane persists, this flow of cane towards the higher price cannot be avoided or stopped. Unless this disparity is removed by the co-operative factories also by paying the controlled price ex-factory, the joint stock factories will have to continue to suffer on account of decreasing supplies of cane. This may lead to highly uneconomic working of the joint stock sector. The Committee feels that in the interest of economic working of both the sectors, parity in respect of capacity to pay for cane, should be brought about. Under the present conditions of cane supplies, any further expansion of capacity to either of the sectors will have to be considered after a thorough examination of the facts, against the claims. In the context of the representations by many factories of acute short supplies of cane, the request, by a number of them that expansion and new licenses should be stopped till existing factories get cane to their rated capacity, is supported by the Committee.

3. Cane development

Irrigation, Supply of Seed, Supply of Manures and Fertilisers and Plant Protection.—There are no major problems under these aspects in this State. There are only some local problems including schemes of bringing additional areas under cane based on irrigation projects contemplated or under execution as mentioned in Chapter II of this report. The attention of the State Government is invited to these local requirements.

It has been represented to the Committee that the Government of Maharashtra is contemplating to hand over the administrative control of canals and other irrigation systems to the co-operative factories of the State. The joint stock and private factories have requested that they should also be represented on any Board that may be set up for the purpose. The Committee is of the view that proper functioning of such administration can only be ensured by giving adequate representation to all users of water.

4. Communications

Several factories such as Bhavaninagar, Changdeonagar, Girna, Ashoknagar, Bhogawati, Gangapur, Ichalkaranji, Kopergaon, Nira, Warnanagar, Shreepur and Kolhapur have pointed out the need either for the construction of additional roads, or making *kachha* roads *pucca* or improving the condition of existing roads. As deficiency in communications affects cane supplies adversely, the attention of the State P.W.D. is invited to these requirements for early examination and implementation.

5. Utilisation of by-products

The Committee notes with satisfaction that the industry in Maharashtra is keen on utilising bagasse to the best advantage. A few proposals for the manufacture of particle board from bagasse have already been submitted to the Government of India for grant of license. These schemes are based on substituting bagasse with fuel oil. The Committee recommends that full encouragement should be given to the entrepreneurs of projects aimed at manufacture of paper pulp, chipboard or particle board from bagasse.

It appears that about 75,000 tonnes of molasses production per year has no suitable avenue of utilisation. There is thus clearly scope for establishment of one more distillery of 3·0 million gallons.

As regards press-mud, it is being utilised for manurial purposes and there is also a factory in this State (Ravalgaon Sugar Farm Ltd., Ravalgaon, District Nasik) which has a wax extraction plant. As there is considerable demand for the production of a hard wax composition with high solvent retention capacity, efforts should be directed towards refining and modifying the crude wax produced by the Ravalgaon sugar factory.

6. Surplus labour

Only a few factories have reported the existence of surplus labour and the number is very small. The Committee thinks that all the existing labour considered surplus or even that which would be rendered surplus would be easily absorbed in the schemes of expansion or development of by-product industries which are contemplated by the industry in this State.

7. Finance required

The cost of rehabilitation, modernisation and expansion of Maharashtra factories comes to Rs. 10·1 crores and that on improvement of communications to Rs. 8·5 crores.

TABLE I-A

Area Under Cane

Sl. No.	Name of Factory	Capacity (tonnes /day)	Area under cane ('000 acres)			
			1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Belvandi	305	0·60	0·16	0·61	0·20
2.	Bhawaninagar	813	2·08	2·24	2·35	2·35
3.	Changdeonagar	813	N.A.	N.A.	N.A.	N.A.
4.	Phaltan (Sakharwadi)	813	2·58	2·86	2·96	2·63
5.	Girna	1,016	5·71	5·20	4·32	3·97
6.	Phaltan (Shriram)	1,016	3·22	3·60	3·86	3·81
7.	Akluj	1,016	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	1,016	22·20	22·20	22·20	22·20
9.	Bhogawati	1,016	N.A.	N.A.	N.A.	6·50
10.	Bidri	1,016	..	..	..	N.A. (Trial season)
11.	Ganeshnagar	1,016	N.A.	N.A.	N.A.	7·00
12.	Gangapur	1,016	N.A.	N.A	N.A.	N.A.
13.	Harigaon	1,016	N.A.	N.A.	N.A.	N.A.
14.	Ichalkaranji	1,016	13·01	14·90	16·22	16·57
15.	Kopergaon	1,016	3·63	3·68	3·74	3·72
16.	Lakshmiwadi	1,016	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	1,016	3·50	3·80	4·00	4·20
18.	Nira	1,016	..	..	..	N.A. (Trial season)
19.	Sakarwadi	1,016	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1,016	3·84	7·86	10·32	10·42
21.	Saswadmali	1,016	N.A.	N.A.	N.A.	N.A.
22.	Tilaknagar	1,016	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	1,016	6·30	6·85	7·88	9·41
24.	Rahuri	1,219	4·80	4·90	6·30	5·00
25.	Ravalgaon	1,219	4·36	5·28	5·53	3·58
26.	Karad	1,270	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	1,321	4·50	4·50	4·40	4·60
28.	Walchandnagar	1,422	N.A.	N.A.	N.A.	N.A.
29.	Pravaranagar	1,473	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	1.727	N.A.	N.A.	N.A.	N.A.
			80·33 (for 14 fys.)	88·03 (for 14 fys.)	94·69 (for 14 fys.)	112·71 (for 17 fys.) 92·66 (for 14 fys.)

Source—Factory Returns.

N.A.—Not Available

TABLE I-B

Estimated Yield of Cane per Acre

Sl. No.	Particulars	Yield per acre (tonnes) 1959-60	1960-61	1961-62	1962-63
1.	In whole State*	27·62	28·98	23·52	32·83
2.	In development zones* . . .	47·56	46·28	..	48·47 (Deccan) 40·68 (Kolhapur)
3.	On factory farm**	51·1	54·6	50·7	54·1

Source—*Indian Central Sugarcane Committee.
**Factory Returns.

TABLE I-C

Per cent Utilisation of Cane Crop for White Sugar

Sl. No.	Name of Factory	1959-60	1960-61	1961-62	1962-63
1.	Belvandi	99·6	82·6	98·0	90·0*
2.	Bhawaninagar	94·0	94·0	94·0	94·0
3.	Changdeonagar	N.A.	N.A.	N.A.	N.A.
4.	Phaltan (Sakharwadi) . . .	N.A.	N.A.	N.A.	95·0
5.	Girna	97·0	97·0	98·0	96·0
6.	Phaltan (Shriram)	96·3	97·0	96·1	97·0
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	91·6	94·0	92·0	93·5
9.	Bhogawati	60·0	80·0	85·0	75·0
10.	Bidri	..	..	..	N.A.
11.	Ganeshnagar	N.A.	N.A.	N.A.	92·0
12.	Gangapur	N.A.	N.A.	N.A.	N.A.
13.	Harigaon	94·2	93·0	93·0	92·2
14.	Ichalkaranji	26·0	35·3	31·2	33·5
15.	Kopergaon	99·7	99·6	99·7	98·9
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	90·0	93·0	90·0	87·0
18.	Nira	..	..	..	N.A.
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	70·0	73·0	52·0	45·0
21.	Saswadmali	96·0	96·0	96·0	96·5
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	44·0	66·0	58·0	48·0
24.	Rahuri	80·0	90·0	60·0	83·0
25.	Ravalgaon	N.A.	N.A.	N.A.	N.A.
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	79·6	84·5	79·0	80·0
28.	Walchandnagar	N.A.	N.A.	N.A.	52·0
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	N.A.	N.A.	N.A.	N.A.

*Sold to Gangapur Factory.
N.A.—Not Available.
Source—Factory Returns.

सत्यमेव जयते

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Actual supplies made to the factories ('000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1.	Belvandi	305	28·04	6·13	30·53	No season
2.	Bhawaninagar . .	813	98·57	133·98	117·50	122·50
3.	Changdeonagar . .	813	100·60	120·99	114·95	126·68
4.	Phaltan (Sakharwadi) .	813	113·00	133·00	125·00	123·00
5.	Girna	1,016	110·00	99·00	91·00	88·00
6.	Phaltan (Shriram) . .	1,016	128·91	159·40	149·02	157·13
7.	Akluj	1,016	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar . . .	1,016	142·00	188·00	184·00	187·00
9.	Bhogawati . . .	1,016	95·44	152·13	115·41	144·62
10.	Bidri	1,016	..	..	..	9·20 (Trial. season)
11.	Ganeshnagar . . .	1,016	N.A.	185·72	196·30	177.04
12.	Gangapur . . .	1,016	N.A.	116·00	123·00	98·00
13.	Harigaon	1,016	180·38	217·61	184·59	187·93
14.	Ichalkaranji . . .	1,016	85·06	159·01	142·50	185·11
15.	Kopergaon . . .	1,016	167·91	208·81	198·17	197·24
16.	Lakshmiwadi . . .	1,016	N.A.	N.A.	N.A.	N.A.
17.	Malegaon . . .	1,016	137·36	167·01	166·46	180·86
18.	Nira	1,016	..	..	..	6·25 (Trial season)
19.	Sakarwadi . . .	1,016	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1,016	75·53	164·52	152·03	163·49
21.	Saswadmali . . .	1.016	137·00	162·00	139·00	114·00
22.	Tilaknagar . . .	1,016	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar . . .	1,016	67·00	139·00	133·00	135·00
24.	Rahuri	1,219	156·00	197·00	180·00	176·00
25.	Ravalgaon	1,219	127·36	143·25	120·96	109·53
26.	Karad	1,270	N.A	N.A.	N.A.	N.A.
27.	Shreepur	1,321	145·00	191·00	150·00	132·00
28.	Walchandnagar . .	1,422	189·60	250·00	193·78	193·02
29.	Pravaranagar . . .	1,473	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur . . .	1,727	125·27	251·85	216·78	304·91
			2410·03 (for 20 fys.)	3545·41 (for 22 fys.)	3223·98 (for 22 fys.)	3318·51 (for 23 fys.)

TABLE I-E

Percentage of Gate, Road and Rail Cane and Number of Growers

Sl. No.	Name of Factory	Capacity (tonnes/ day)	% gate cane	% road cane	% rail cane	No. of growers supplying cane to factory
1.	Belvandi	305	100·00	Nil	Nil	N.A.
2.	Bhawaninagar	813	100·00	Nil	Nil	897
3.	Changdeonagar	813	100·00	Nil	Nil	549
4.	Phaltan (Sakharwadi)	813	100·00	Nil	Nil	582
			(By factory's tramway)			
5.	Girna	1,016	100·00	Nil	Nil	2,796
6.	Phaltan (Shriram)	1,016	100·00	Nil	Nil	1,945
7.	Akluj	1,016	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	1,016	100·00	Nil	Nil	1,414
9.	Bhogawati	1,016	100·00	Nil	Nil	1,900
10.	Bidri	1,016	100·00	Nil	Nil	N.A.
11.	Ganeshnagar	1,016	100·00	Nil	Nil	1,414
12.	Gangapur	1,016	100·00	Nil	Nil	1,891
13.	Harigaon	1,016	100·00	Nil	Nil	515
14.	Ichalkaranji	1,016	100·00	Nil	Nil	2,189
15.	Kopergaon	1,016	100·00	Nil	Nil	998
16.	Lakshmiwadi	1,016	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	1,016	100·00	Nil	Nil	1,805
18.	Nira	1,016	100·00	Nil	Nil	2,200
19.	Sakarwadi	1,016	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1,016	100·00	Nil	Nil	3,347
21.	Saswadmali	1,016	100·00	Nil	Nil	N.A.
22.	Tilaknagar	1,016	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	1,016	100·00	Nil	Nil	2,447
24.	Rahuri	1,219	100·00	Nil	Nil	N.A.
25.	Ravalgaon	1.219	100·00	Nil	Nil	1,614
26.	Karad	1,270	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	1,321	100·00	Nil	Nil	773
28.	Walchandnagar	1,422	100·00	Nil	Nil	1,500
29.	Pravaranagar	1,473	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	1,727	100·00	Nil	Nil	5,943
						36,719 (for 20 fys.)

सत्यमेव जयते

TABLE-II

Means of communications

Sl. No.	Name of Factory	Existing road length (*pucca*) in factory's zone Kms.	Further requirements of *pucca* roads (Kms.)
1.	Belvandi	N.A.	N.A.
2.	Bhawaninagar	56	16
3.	Changdeonagar	N.A.	N.A.
4.	Phaltan (Sakharwadi)	Factory has got their own trolley line & the cane is supplied at different centres.	
5.	Girna	64	101
6.	Phaltan (Shriram)	37	27
7.	Akluj	N.A.	N.A.
8.	Ashoknagar	89	68
9.	Bhogawati	60	N.A.
10.	Bidri	N.A.	N.A.
11.	Ganeshnagar	70	58
12.	Gangapur	300	500
13.	Harigaon	24	N.A.
14.	Ichalkaranji	155	138
15.	Kopergaon	Nil	16 kms. of trolley line in heavy area of sugarcane.
16.	Lakshmiwadi	N.A.	N.A.
17.	Malegaon	N.A.	N.A.
18.	Nira	Nil	96
19.	Sakarwadi	N.A.	N.A.
20.	Sangli	N.A.	128
21.	Saswadmali	10	N.A.
22.	Tilaknagar	N.A.	N.A.
23.	Warnanagar	131	75
24.	Rahuri	N.A.	N.A.
25.	Ravalgaon	8	N.A.
26.	Karad	N.A.	N.A.
27.	Shreepur	Nil	100
28.	Walchandnagar	102	173
29.	Pravaranagar	N.A.	N.A.
30.	Kolhapur	416	64
	TOTAL . .	1,522	1,544 Kms. *pucca* road & 16 kms. of trolley line.

सत्यमेव जयते

TABLE III-A

Milling Plant

Sl. No.	Name of Factory	Capacity tonnes/ day	Cane knives Total HP & No. of sets	Milling tandem	Mill drive	
					Type	Total HP
1.	Belvandi	305	70(2)	15/15″×30″	B	N.A.
2.	Bhawaninagar	813	132(2)	12/21″×41″ 6/24″×48″	B	N.A.
3.	Changdeonagar	813	135(2)	15/25″×48″	E	350
4.	Phaltan (Sakharwadi)	813	140(2)	17/24″×48″	E	480
5.	Girna	1,016	268(2)	15/25″×48″	T	990
6.	Phaltan (Shriram)	1,016	200(2)	12/26″×48″	T	800
7.	Akluj	1,016	250(2)	12/28″×56″	T	940
8.	Ashoknagar	1,016	230(2)	15/25″×48″	T	625
9.	Bhogawati	1,016	268(2)	15/26″×48″	T	1,000
10.	Bidri	1,016	250(2)	12/28″×56″	T	940
11.	Ganeshnagar	1,016	230(2)	18/24″×48″	T	750
12.	Gangapur	1,016	250(2)	12/28″×56″	E	700
13.	Harigaon	1,016	195(2)	18/28″×56″	E	700
14.	Ichalkaranji	1,016	300(2)	15/25″×48″	T	1,000
15.	Kopergaon	1,016	350(2)	12/28″×56″	E	900
16.	Lakshmiwadi	1,016	250(2)	15/30″×60″	T E	500 420
17.	Malegaon	1,016	230(2)	15/25″×48″	T	625
18.	Nira	1,016	300(2)	12/28″×56″	T	N.A.
19.	Sakarwadi	1,016	152(2)	15/25″×49″	E	500
20.	Sangli	1,016	268(2)	15/26″×48″	T	N.A.
21.	Saswadmali	1,016	120(1)	18/25″×48″	E	600
22.	Tilaknagar	1,016	300(2)	18/25½″×48″	E	420
23.	Warnanagar	1,016	300(2)	15/25″×48″	T	1,000
24.	Rahuri	1,219	240(2)	15/25″×48″	T	625
25.	Ravalgaon	1,219	200(2)	18/24″×48″	T E	520 N.A.
26.	Karad	1,270	250(2)	12/28″×56″	T	1,072
27.	Shreepur	1,321	164(2)	15/29″×57″	B	600
28.	Walchandnagar	1,422	275(2)	18/28″×56″	E	700
29.	Pravaranagar	1,473	315(2)	15/30½″×60″	T	1,500
30.	Kolhapur	1,727	500(2)	15/34″×66″	T	2,250

E—Steam Engine.

T—Steam Turbine.

N.A.—Not Available.

Source—Factory Returns.

TABLE III-B

Power & Steam Generating Plant

Sl. No.	Name of Factory	Capacity (tonnes/day)	Power generating unit Total KW	No. H.S. Sq. ft. Boilers Pressure (p.s.i.)	H.S. per cent boiler HS	
					Economizer	Super-heater
1.	Belvandi . .	305	111	4/7612/160	73·5	Nil
2.	Bhawaninagar .	813	400	4/11000/200	8·0	Nil
3.	Changdeonagar .	813	950	4/8430/160 6000/240	42·0	Nil
4.	Phaltan (Sakharwadi)	813	240	4/15200/160	26·0	Nil
5.	Girna . .	1,016	1,578	3/21957/290	10·5	17·5
6.	Phaltan (Shriram)	1,016	850	3/12300/300	4·3	34·0
7.	Akluj . .	1,016	1,250	2/14000/250	50·0	14·0
8.	Ashoknagar .	1,016	1,000	2/11500/N.A.	Nil	E
9.	Bhogawati . .	1,016	1,250	3/19375/300	27·0	E
10.	Bidri . . .	1,016	1,250	2/14000/250	50·0	14·0
11.	Ganeshnagar .	1,016	1,212	2/10500/294	Nil	E
12.	Gangapur . .	1,016	1,262	3/14530/290	17·0	23·0
13.	Harigaon . .	1,016	1,020	5/22285/160	Nil	E
14.	Ichalkaranji .	1,016	1,200	2/N.A./296	E	E
15.	Kopergaon .	1,016	1,100	3/18700/295	15·0	13·0
16.	Lakshmiwadi .	1,016	1,400	6/21924/N.A.	40·0	E
17.	Malegaon . .	1,016	1,200	2/11500/300	Nil	Nil
18.	Nira . . .	1,016	1,250	2/14000/200	Nil	2·5
19.	Sakarwadi .	1,016	1,335	4/11700/200 7135/285	74·0	E
20.	Sangli . .	1,016	1,250	3/21957/300	32·0	17·5
21.	Saswadmali .	1,016	700	5/17790/160	21·5	E
22.	Tilaknagar .	1,016	1,700	7/24560/215	61·5	6·0
23.	Warnanagar .	1,016	1,200	2/10000/295	16·0	30·0
24.	Rahuri . .	1,219	1,000	2/11600/294	Nil	E
25.	Ravalgaon . .	1,219	2,153	9/5213/125 17425/160	27·0	15·0
26.	Karad . .	1,270	1,250	2/14000/280	50·0	E
27.	Shreepur . .	1,321	2,400	3/15370/200	45·0	20·0
28.	Walchandnagar .	1,422	3,900	4/7520/160 12184/384	64·5	13·5
29.	Pravaranagar .	1,473	1,432	3/15000/280	4·3	32·0
30.	Kolhapur . .	1,727	2,574	4/22570/160	10·0	6·3

E—Existing (H. S. not given).
N.A.—Not Available.
Source—Factory Returns.

TABLE III-C-i

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Juice Weighment manual/ automatic	Juice heaters: Total H. S. sq. ft.	Juice heaters: Vertical or horizontal	Juice heaters: V. L. Juice heater H.S. sq. ft.
1.	Belvandi	305	M	1,800	V	Nil
2.	Bhawaninagar . . .	813	M	2,400	V	Nil
3.	Changdeonagar . .	813	AW	4,600	V	Nil
4.	Phaltan (Sakharwadi) .	813	AW	4,000	V	Nil
5.	Girna	1,016	AW	3,300	V	Nil
6.	Phaltan (Shriram) . .	1,016	AW	4,300	V	Nil
7.	Akluj	1,016	AW	3,000	V	Nil
8.	Ashoknagar . . .	1,016	AW	3,300	V	Nil
9.	Bhogawati . . .	1,016	AW	3,300	V	Nil
10.	Bidri	1,016	AW	3,000	V	Nil
11.	Ganeshnagar . . .	1,016	AW	4,400	V	Nil
12.	Gangapur . . .	1,016	AW	3,000	V	Nil
13.	Harigaon	1,016	AW	3,200	V	Nil
14.	Ichalkaranji . . .	1,016	AW	3,300	V	Nil
15.	Kopergaon . . .	1,016	AW	3,066	V	Nil
16.	Lakshmiwadi . . .	1,016	AW	4,800	H&V	660
17.	Malegaon . . .	1,016	M	3,000	V	Nil
18.	Nira	1,016	AW	3,000	V	Nil
19.	Sakarwadi . . .	1,016	AW	3,200	V	800
20.	Sangli	1,016	AW	4,300	V	Nil
21.	Saswadmali . . .	1,016	AW	4,300	V	Nil
22.	Tilaknagar . . .	1,016	AW	4,000	V	Nil
23.	Warnanagar . . .	1,016	AW	3,300	V	Nil
24.	Rahuri	1,219	M	3,300	V	Nil
25.	Ravalgaon . . .	1,219	AW	4,000	V	Nil
26.	Karad	1,270	AW	4,100	V	Nil
27.	Shreepur . . .	1,321	AW	3,000	V	Nil
28.	Walchandnagar . .	1,422	MW	4,000	V	Nil
29.	Pravaranagar . . .	1,473	AW	3,600	V	Nil
30.	Kolhapur . . .	1,727	AW	6,143	V	Nil

M—Measuring Tanks;
AW—Automatic Weighment;
MW--Manual Weighment;
V--Vertical;
H--Horizontal;
Source—Factory Returns.

सत्यमेव जयते

TABLE III-Cii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Sulphitation Process	Settling	Filtration	Pre-Heater H.S. Sq. ft.	Vapour Cell H.S. Sq. ft.	Evaporators	
								Type	Vapour Bleeding
1.	Belvandi	305	B	C	B	Nil	Nil	Q	No
2.	Bhawaninagar	813	C	B	B	1,000	Nil	Q	Yes
3.	Changdeonagar	813	B	C	C	Nil	Nil	Q	Yes
4.	Phaltan (Sakharwadi)	813	B	C	C	Nil	Nil	Q	No
5.	Girna	1,016	B	C	C	Nil	Nil	Q	Yes
6.	Phaltan (Shriram)	1 016	C	C	C	Nil	Nil	Q	Yes
7.	Akluj	1,016	C	C	C	Nil	Nil	Q	Yes
8.	Ashoknagar	1,016	B	C	C	Nil	Nil	Q	Yes
9.	Bhogawati	1,016	B	C	C	Nil	Nil	Q	No
10.	Bidri	1,016	C	C	C	Nil	Nil	Q	Yes
11.	Ganeshnagar	1,016	C	C	C	Nil	Nil	Q	Yes
12.	Gangapur	1,016	B	C	C	Nil	Nil	Q	Yes
13.	Harigaon	1,016	B	C	C	Nil	Nil	Q	Yes
14.	Ichalkaranji	1,016	B	C	C	Nil	Nil	Q	N.A.
15.	Kopergaon	1,016	C	C	C	1,022	Nil	Q	Yes
16.	Lakshmiwadi	1,016	C	C	C	Nil	Nil	Qui	No
17.	Malegaon	1,016	B	C	C	Nil	Nil	Qui	Yes
18.	Nira	1,016	C	C	C	Nil	Nil	Q	Yes
19.	Sakarwadi	1,016	C	C	C	Nil	Nil	Qui	Yes
20.	Sangli	1,016	C	C	C	Nil	Nil	Q	Yes
21.	Saswadmali	1,016	B	C	C	Nil	4,000	Q	Yes
22.	Tilaknagar	1,016	B	C	C	800	Nil	Q	No
23.	Warnanagar	1,016	B	C	C	Nil	Nil	Q	Yes
24.	Rahuri	1,219	C	C	C	1,100	Nil	Q	Yes
25.	Ravalgaon	1,219	C	C	C	Nil	Nil	Q	No
26.	Karad	1,270	C	C	C	Nil	Nil	Q	Yes
27.	Shreepur	1,321	B	C	B	1,000	5,500	Qui	Yes
28.	Walchandnagar	1,422	C	C	C	Nil	Nil	Q	Yes
29.	Pravaranagar	1,473	C	C	C	1,800	Nil	Q	Yes
30.	Kolhapur	1,727	C	C	C	Nil	9,000	Q	Yes

B—Batch;

C—Continuous;

Q—Quadruple;

Qui—Quintuple;

N.A.—Not Available;

Source—Factory Returns.

TABLE III-Ciii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Pans		Low grade crystallizers	
			Total capacity (tonnes)	% Coil capacity	No.	% wate cooled cap.
1.	Belvandi	305	65	39	5	Nil
2.	Bhawaninagar	813	74	Nil	6	83
3.	Changdeonagar	813	154	Nil	6	100
4.	Phaltan (Sakharwadi)	813	145	Nil	7	100
5.	Girna	1,016	133	Nil	6	100
6.	Phaltan (Shriram)	1,016	111	Nil	5	100
7.	Akluj	1,016	120	Nil	4	100
8.	Ashoknagar	1,016	128	Nil	4	100
9.	Bhogawati	1,016	156	Nil	6	100
10.	Bidri	1,016	111	Nil	4	100
11.	Ganeshnagar	1,016	165	Nil	6	100
12.	Gangapur	1,016	140	Nil	5	100
13.	Harigaon	1,016	189	16·5	6	100
14.	Ichalkaranji	1,016	155	Nil	6	100
15.	Kopergaon	1,016	135	Nil	5	100
16.	Lakshmiwadi	1,016	134	Nil	7	100
17.	Malegaon	1,016	140	Nil	6	100
18.	Nira	1,016	120	Nil	6	100
19.	Sakarwadi	1,016	156	Nil	6	100
20.	Sangli	1,016	140	Nil	6	100
21.	Saswadmali	1,016	129	Nil	6	100
22.	Tilaknagar	1,016	229	Nil	8	100
23.	Warnanagar	1,016	155	Nil	6	100
24.	Rahuri	1,219	154	Nil	6	100
25.	Ravalgaon	1,219	150	Nil	7	100
26.	Karad	1,270	184	Nil	6	100
27.	Shreepur	1,321	172	25	4	100
28.	Walchandnagar	1,422	165	Nil	5	100
29.	Pravaranagar	1,473	195	Nil	6	100
30.	Kolhapur	1,727	242	Nil	3 (Continuous)	100

Source—Factory Returns.

TABLE III-Civ

Boiling House Equipment

Sl. No.	Name of factory	Capacity (tonnes/ day)	Centrifugals			
			Ordinary		High Speed	
			No.	Size	No.	Size
1	2	3	4	5	6	7
1.	**Belvandi** . . .	305	16	30″×60″	Nil	—
2.	**Bhawaninagar** . .	813	10 1 5	42″×23″ 42″×20″ 36″×18″	Nil	—
3.	**Changdeonagar** . .	813	3	36″×18″	2 5	49″×32″ 45″×25″
4.	**Phaltan (Sakharwadi)** .	813	17 4	36″×18″ 42″×20″	Nil	
5.	**Girna** . . .	1,016	Nil	..	2 5	49″×25″ 48″×27″
6.	**Phaltan (Shriram)** .	1,016	Nil	..	6 3	49″×32″ 42″×24″
7.	**Akluj** . . .	1,016	Nil	—	10	40″×30″
8.	**Ashoknagar** . .	1,016	Nil	..	4 5	49″×32″ 48″×25″
9.	**Bhogawati** . . .	1,016	Nil	..	3 1 5	49″×25″ 49″×32″ 47″×28″
10.	**Bidri**	1,016	Nil	..	10	40″×30″
11.	**Ganeshnagar** . .	1,016	Nil	..	6 5	49″×28″ 47″×28″
12.	**Gangapur** . . .	1,016	Nil	..	7	40″×30″
13.	**Harigaon** . . .	1,016	21	42″×20″	Nil	..
14.	**Ichalkaranji** . .	1,016	Nil	..	4 5	49″×32″ 48″×24″
15.	**Kopergaon** . .	1,016	Nil	..	4 3 2	49″×32″ 45″×25″ 40″×30″
16.	**Lakshmiwadi** . .	1,016	35 3	36″×18″ 40″×20″	10	40″×20″
17.	**Malegaon** . . .	1,016	Nil	..	4 5 3	49″×32″ 48″×24″ 40″×24″
18.	**Nira**	1,016	Nil	..	5 5	49″×32″ 24″×48″
19.	**Sakarwadi** . .	1,016	13	36″×18″	2 3	49″×32″ 42″×24″
20.	**Sangli** . . .	1,016	Nil	..	1 3 5	49″×32″ 48″×25″ 48″×27½″
21.	**Saswadmali** . .	1,016	5	30″×18″	2 5	42″×32″ 42″×24″
22.	**Tilaknagar** . .	1,016	8	36″×18″	5 5	49″×32″ 48″×24″
23.	**Warnanagar** . .	1,016	Nil	..	4 5	49″×32″ 48″×24″
24.	**Rahuri** . . .	1,219	Nil	..	4 5	49″×32″ 48″×24″

1	2	3	4	5	6	7
25.	Ravalgaon	1,219	Nil	..	10	40"×30"
26.	Karad	1,270	Nil	..	10	40"×30"
27.	Shreepur	1,321	20	42"×23"	Nil	..
28.	Walchandnagar	1,422	Nil	..	5 3	40"×30" 40"×24"
29.	Pravaranagar	1,473	Nil	..	4 9	49"×32" 45"×24"
30.	Kolhapur	1,727	Nil	..	4 7 5	30"×48" 40"×24" 48"×24"

Source—Factory Returns.

TABLE IV-Ai

Cane Quality (Pol % Cane)

Sl. No.	Name of Factory	Pol per cent Cane			
		1959-60	1960-61	1961-62	1962-63
1.	Belvandi	14·33	12·89	14·13	No season
2.	Bhawaninagar	14·03	14·10	14·24	13·74
3.	Changdeonagar	13·47	13·58	13·61	13·58
4.	Phaltan (Sakharwadi)	14·75	14·15	14·18	14·67
5.	Girna	13·27	13·38	13·91	13·93
6.	Phaltan (Shriram)	14·26	14·15	14·53	14·27
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	14·33	14·24	14·26	14·35
9.	Bhogawati	13·38	13·41	14·12	14·19
10.	Bidri	..	..	..	14·65
11.	Ganeshnagar	14·03	13·99	13·98	14·15
12.	Gangapur	13·08	13·02	14·24	14·43
13.	Harigaon	14·35	13·95	13·81	14·57
14.	Ichalkaranji	14·03	13·76	14·40	14·16
15.	Kopergaon	14·24	14·24	14·31	14·03
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	14·95	14·92	15·08	14·45
18.	Nira	..	..	..	14·34
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	13·85	14·02	14·58	14·91
21.	Saswadmali	13·09	13·40	13·47	13·59
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	14·82	14·66	14·66	15·19
24.	Rahuri	14·58	14·31	14·07	13·88
25.	Ravalgaon	13·14	12·79	13·90	13·86
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	13·23	13·45	14·33	13·91
28.	Walchandnagar	13·88	13·95	14·42	14·10
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	15·30	14·72	14·75	14·51

N.A.—Not Available.

Source—**Factory Returns.**

TABLE IV-Aii

Cane Quality (Fibre per cent Cane)

Sl. No.	Name of Factory	Fibre per cent Cane			
		1959-60	1960-61	1961-62	1962-63
1.	Belvandi	11·49	12·75	11·92	No season
2.	Bhawaninagar	11·23	9·83	12·83	12·24
3.	Changdeonagar	12·25	11·52	11·27	12·66
4.	Phaltan (Sakharwadi)	12·50	11·51	12·45	13·27
5.	Girna	12·99	12·12	12·57	12·22
6.	Phaltan (Shriram)	11·98	12·70	12·09	12·11
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	12·08	11·60	11·74	11·44
9.	Bhogawati	11·69	10·98	10·93	10·79
10.	Bidri	..	..	..	12·64
11.	Ganeshnagar	12·40	11·66	11·79	12·22
12.	Gangapur	13·06	12·68	12·76	13·17
13.	Harigaon	11·23	13·42	12·95	12·07
14.	Ichalkaranji	13·53	12·53	12·43	12·14
15.	Kopergaon	12·31	13·20	12·61	13·02
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	12·16	12·05	11·22	11·64
18.	Nira	..	..	..	15·13
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	13·32	12·46	10·89	10·77
21.	Saswadmali	11·61	11·16	11·48	11·22
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	12·66	11·46	12·52	10·76
24.	Rahuri	13·02	12·56	10·92	10·75
25.	Ravalgaon	13·55	12·11	13·21	12·83
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	12·30	12·99	12·07	12·28
28.	Walchandnagar	14·03	14·06	13·90	13·70
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	11·92	11·04	11·93	12·61

सत्यमेव जयते

N.A.—Not Available.

SOURCE—**Factory Returns.**

TABLE IV-Aiii

Cane Quality (Primary Juice Purity)

Sl. No.	Name of Factory	Primary juice purity			
		1959-60	1960-61	1961-62	1962-63
1.	Belvandi	87·98	81·75	88·41	No season
2.	Bhawaninagar	88·51	88·33	89·20	89·73
3.	Changdeonagar	86·22	85·76	86·74	86·40
4.	Phaltan (Sakharwadi)	88·54	86·25	87·81	89·71
5.	Girna	85·17	84·95	86·54	86·29
6.	Phaltan (Shriram)	87·42	86·05	87·14	87·68
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	86·74	87·04	86·81	87·55
9.	Bhogawati	84·79	83·17	85·61	86·35
10.	Bidri	..	..	..	85·93
11.	Ganeshnagar	86·32	86·19	87·27	87·44
12.	Gangapur	82·36	79·76	85·18	87·77
13.	Harigaon	88·07	86·65	87·61	88·53
14.	Ichalkaranji	86·66	83·79	84·72	85·29
15.	Koperagaon	86·27	85·46	86·47	85·99
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	88·40	87·58	88·17	88·34
18.	Nira	..	..	..	85·04
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	83·26	83·95	86·25	87·05
21.	Saswadmali	86·24	86·56	87·27	87·56
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	86·44	85·85	86·87	87·34
24.	Rahuri	87·66	87·05	87·43	87·25
25.	Ravalgaon	83·50	81·97	84·17	85·76
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	86·59	85·21	87·85	87·51
28.	Walchandnagar	85·09	83·98	86·00	85·95
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	89·39	86·84	86·54	85·91

N.A.—Not Available.

SOURCE—Factory Returns.

सत्यमेव जयते

TABLE IV-Bi

Time Account (Duration of Season)

Sl. No.	Name of Factory	Duration of Season			
		1959-60	1960-61	1961-62	1962-63
1.	Belvandi	128	107	117	**No season**
2.	Bhawaninagar	159	206	180	**191**
3.	Changdeonagar	149	164	157	**170**
4.	Phaltan (Sakharwadi)	168	213	183	**171**
5.	Girna	162	157	159	**128**
6.	Phaltan (Shriram)	193	209	178	**178**
7.	Akluj	N.A.	N.A.	N.A.	**N.A.**
8.	Ashoknagar	184	203	211	**202**
9.	Bhogawati	129	172	124	**156**
10.	Bidri	..	..	..	**30 (Trial season)**
11.	Ganeshnagar	166	208	215	**184**
12.	Gangapur	139	146	140	**109**
13.	Harigaon	168	199	165	**174**
14.	Ichalkaranji	141	192	155	**199**
15.	Kopergaon	192	218	197	**196**
16.	Lakshmiwadi	N.A.	N.A.	N.A.	**N.A.**
17.	Malegaon	188	191	186	**207**
18.	Nira	..	..	..	**28 (Trial season)**
19.	Sakarwadi	N.A.	N.A.	N.A.	**N.A.**
20.	Sangli	113	185	170	**149**
21.	Saswadmali	158	192	164	**136**
22.	Tilaknagar	N.A.	N.A.	N.A.	**N.A.**
23.	Warnanagar	149	164	155	**140**
24.	Rahuri	173	212	196	**194**
25.	Ravalgaon	151	160	131	**144**
26.	Karad	N.A.	N.A.	N.A.	**N.A.**
27.	Shreepur	164	203	160	**136**
28.	Walchandnagar	146	196	164	**156**
29.	Pravaranagar	N.A.	N.A.	N.A.	**N.A.**
30.	Kolhapur	107	149	125	**166**

N.A.—Not Available.

SOURCE—Factory Returns.

सत्यमेव जयते

TABLE IV-Bii

Time Account (Time loss)

Sl. No.	Name of Factory	Time lost per cent available			
		1959-60	1960-61	1961-62	1962-63
1.	Belvandi	13·10	11·57	13·39	No season
2.	Bhawaninagar	21·46	19·55	16·07	17·44
3.	Changdeonagar	16·74	11·43	10·66	10·94
4.	Phaltan (Sakharwadi)	12·43	14·90	13·27	11·83
5.	Girna	26·49	19·00	17·30	20·60
6.	Phaltan (Shriram)	23·10	19·14	14·70	14·12
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	26·93	12·76	14·66	14·28
9.	Bhogawati	34·41	22·44	17·56	19·06
10.	Bidri	..	..	..	65·40 (Trial season)
11.	Ganeshnagar	18·90	14·48	16·72	16·34
12.	Gangapur	40·25	24·06	15·77	10·88
13.	Harigaon	10·46	10·02	9·33	10·90
14.	Ichalkaranji	41·61	21·98	17·09	21·29
15.	Kopergaon	20·38	15·20	12·71	13·92
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	24·45	18·93	14·19	15·46
18.	Nira	..	..	..	66·30 (Trial season)
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	33·57	16·98	20·22	11·17
21.	Saswadmali	19·94	18·90	17·86	19·14
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	59·89 (I season)	22·25	26·78	18·76
24.	Rahuri	16·02	12·07	12·65	13·76
25.	Ravalgaon	25·81	22·28	26·29	22·90
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	21·65	19·38	20·26	16·52
28.	Walchandnagar	15·41	15·48	16·91	15·73
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	30·98	13·74	14·80	19·40

N.A. = Not Available.

SOURCE = Factory Returns.

सत्यमेव जयते

TABLE IV-Ci

Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent Cane			
		1959-60	1960-61	1961-62	1962-63
1.	Belvandi	11·95	10·24	11·52	No season
2.	Bhawaninagar	11·80	11·75	11·78	11·13
3.	Changdeonagar	11·44	11·62	11·70	11·56
4.	Phaltan (Sakharwadi)	12·66	11·73	11·94	12·61
5.	Girna	10·80	10·94	11·65	11·83
6.	Phaltan (Shriram)	12·20	12·09	12·44	12·28
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	12·04	11·08	11·93	12·33
9.	Bhogawati	10·84	11·06	11·91	12·07
10.	Bidri	..	..	..	12·04 (Trial season)
11.	Ganeshnagar	11·58	11·56	11·77	11·90
12.	Gangapur	10·09	9·91	11·43	12·10
13.	Harigaon	12·34	11·76	11·87	12·50
14.	Ichalkaranji	11·96	11·66	12·10	12·12
15.	Kopergaon	11·77	11·58	11·73	11·71
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	12·46	12·58	12·81	12·00
18.	Nira	..	..	..	9·62 (Trial season)
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	11·69	11·64	12·27	12·99
21.	Saswadmali	11·01	11·21	11·28	11·55
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	12·71	12·54	12·68	13·39
24.	Rahuri	12·00	11·64	11·85	11·84
25.	Ravalgaon	10·84	10·48	11·63	11·87
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	10·97	11·00	12·04	11·80
28.	Walchandnagar	11·82	11·76	12·25	12·13
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	12·99	12·57	12·45	12·48

N.A.=Not Available.

SOURCE=Factory Returns.

TABLE IV-Cii

Technical Efficiency (Total losses)

Sl. No.	Name of Factory	Total losses per cent cane			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Belvandi	2·40	2·67	2·63	No season
2.	Bhawaninagar	2·25	2·37	2·48	2·61
3.	Changdeonagar	2·05	1·99	1·93	2·04
4.	Phaltan (Sakharwadi)	2·11	2·44	2·26	2·08
5.	Girna	2·49	2·46	2·28	2·12
6.	Phaltan (Shriram)	2·08	2·08	2·11	2·01
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	2·31	2·28	2·35	2·04
9.	Bhogawati	2·56	2·37	2·23	2·14
10.	Bidri	..	..	..	2·64 (Trial season)
11.	Ganeshnagar	2·47	2·45	2·23	2·27
12.	Gangapur	3·01	3·13	2·83	2·35
13.	Harigaon	2·03	2·21	1·96	2·09
14.	Ichalkaranji	2·09	2·12	2·32	2·06
15.	Kopergaon	2·49	2·68	2·60	2·34
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	2·51	2·36	2·29	2·47
18.	Nira	...	..	..	4·73 (Trial season)
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	2·18	2·40	2·33	1·94
21.	Saswadmali	2·10	2·21	2·21	2·06
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	2·13	2.14	2.00	1.82
24.	Rahuri	2·60	2·63	2·24	2·06
25.	Ravalgaon	2·32	2·33	2·29	2·01
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	2·28	2·47	2·31	2·13
28.	Walchandnagar	2·08	2·21	2·19	1·99
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	2·33	2·17	2·32	2·05

N.A.=Not Available.

SOURCE=Factory Returns.

सत्यमेव जयते

TABLE IV-Ciii

Technical Efficiency (Reduced overall extraction)

Sl. No.	Name of Factory	Reduced overall extraction			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Belvandi	82·61	79·53	80·86	No season
2.	Bhawaninagar . . .	81·89	80·48	81·18	83·40
3.	Changdeonagar . . .	85·66	85·90	85·94	85·71
4.	Phaltan (Sakharwadi) . .	85·02	83·38	83·42	86·98
5.	Girna	82·99	82·84	84·29	85·33
6.	Phaltan (Shriram) . .	85·39	85·46	85·62	87·24
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar . . .	83·65	83·21	83·02	86·13
9.	Bhogawati . . .	82·26	83·98	84·18	84·32
10.	Bidri	..	..	..	82·80 (Trial season)
11.	Ganeshnagar . . .	83·91	82·94	83·58	83·69
12.	Gangapur	81·49	82·82	82·41	84·20
13.	Harigaon	84·59	84·74	85·62	84·33
14.	Ichalkaranji . . .	88·44	86·55	85·05	85·05
15.	Kopergaon . . .	82·96	82·86	82·31	84·41
16.	Lakshmiwadi . . .	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	82·14	83·43	83·16	81·32
18.	Nira	..	..	..	68·57 (Trial season)
19.	Sakarwadi . . .	N.A.	N.A.	N.A.	N.A.
20.	Sangli	86·73	85·05	83·98	86·54
21.	Saswadmali . . .	84·04	83·51	83·59	84·07
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar . . .	85·92	85·81	86·12	86·55
24.	Rahuri	82·56	82·07	83·45	85·69
25.	Ravalgaon	85·34	85·15	85·92	86·70
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	82·95	84·97	82·86	84·34
28.	Walchandnagar . . .	85·91	85·81	84·78	85·85
29.	Pravaranagar . . .	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	80·07	82·96	83·92	85·35

N.A.=Not Available.

SOURCE=Factory Returns.

TABLE IV-D1

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Belvandi	32·14	36·34	35·87	No season
2.	Bhawaninagar	30·61	27·92	34·06	32·67
3.	Changdeonagar	29·63	25·41	24·75	26·89
4.	Phaltan (Sakharwadi)	23·98	22·23	26·90	25·44
5.	Girna	33·68	29·16	28·00	28·26
6.	Phaltan (Shriram)	25·84	25·59	24·30	22·55
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	26·90	23·07	25·02	22·99
9.	Bhogawati	37·57	28·36	29·26	30·16
10.	Bidri	..	..	..	45·12 (Trial season)
11.	Ganeshnagar	34·92	28·55	29·14	29·48
12.	Gangapur	41·00	32·48	29·78	26·63
13.	Harigaon	24·38	25·23	28·05	28·74
14.	Ichalkaranji	34·70	29·42	28·75	28·26
15.	Kopergaon	28·05	28·41	29·03	28·32
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	30·48	28·92	26·38	27·10
18.	Nira	..	..	..	70·38 (Trial season)
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	34·57	30·65	27·65	20·45
21.	Saswadmali	24·73	25·25	27·34	26·08
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	37·20	30·20	29·44	24·67
24.	Rahuri	32·91	27·22	25·47	25·85
25.	Ravalgaon	31·50	29·13	31·20	31·24
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	27·43	27·89	26·74	26·64
28.	Walchandnagar	29·51	29·65	30·39	30·56
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	29·09	25·09	27·58	27·79

N.A.=Not Available.

SOURCE=Factory Returns.

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed per cent cane (in terms of bagasse).			
		1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6
1.	Belvandi	5·98	7·18	8·31	No season
2.	Bhawaninagar	6·06	6·10	5·50	5·61
3.	Changdeonagar	3·63	1·37	1·47	0·31
4.	Phaltan (Sakharwadi)	Nil	0·20	2·78	Nil
5.	Girna	6·99	3·95	3·61	4·51
6.	Phaltan (Shriram)	1·62	0·32	0·65	0·27
7.	Akluj	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	3·67	1·14	2·56	1·14
9.	Bhogawati	12·54	4·65	5·44	6·50
10.	Bidri	..	..	..	16·68 (Trial season)
11.	Ganeshnagar	8·85	3·50	3·80	2·63
12.	Gangapur	13·00	5·49	2·60	0·15
13.	Harigaon	2·51	0·09	3·54	4·75
14.	Ichalkaranji	6·72	3·14	2·97	2·51
15.	Kopergaon	2·48	0·76	2·33	0·70
16.	Lakshmiwadi	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	7·60	5·64	4·81	4·65
18.	Nira	..	..	..	36·09 (Trial season)
19.	Sakarwadi	N.A.	N.A.	N.A.	N.A.
20.	Sangli	7·03	4·75	5·20	Nil
21.	Saswadmali	0·56	0·96	2·38	2·10
22.	Tilaknagar	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	10·61 (First season)	6·66	3·77	2·51
24.	Rahuri	4·98	2·08	1·59	2·34
25.	Ravalgaon	5·17	4·74	4·85	5·68
26.	Karad	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	0·71	0·70	1·48	1·14
28.	Walchandnagar	1·77	1·59	3·07	3·90
29.	Pravaranagar	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	3·96	2·25	2·36	1·61

N.A. = Not Available.

SOURCE = Factory Returns.

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of Factory	Capacity (tonnes/day)	Specifications of existing milling tandem	Expansion license already granted (tonnes)	Expansion as asked for by the factory (tonnes)	Financial requirement as submitted by the factory (lac Rs.)
1	2	3	4	5	6	7
1.	Belvandi . .	305	15/15′×30′	1,000	1,016	150·0
2.	Bhawaninagar .	813	12/21′×42′ 6/24′×48′	1,250	1,270*	85·0
3.	Changdeonagar .	813	15/25′×48′	..	1,250	N.A.
4.	Phaltan (Sakharwadi)	813	17/24′×48′	1,500	1,016	37·93
5.	Girna . . .	1,016	15/25′×48′	..	..	1·77
6.	Phaltan (Shriram) .	1,016	12/26′×48′	1,200	1,219	35·0
7.	Akluj . . .	1,016	12/28′×56′	..	Data not	received
8.	Ashoknagar .	1,016	15/25′×48′	1,500	2,000	90·61
9.	Bhogawati .	1,016	15/26′×48′	1,250	1,300	10·51
10.	Bidri . . .	1,016	12/28′×56′	..	1,600	33·28
11.	Ganeshnagar . .	1,016	18/24′×48′	1,250	1,270	26·63
12.	Gangapur . .	1,016	12/28′×56′	..	N.A.	N.A.
13.	Harigaon . .	1,016	18/28′×56′	1,500	2,000	N.A.
14.	Ichalkaranji . .	1,016	15/25′×48′	1,500	2,000	80·0
15.	Kopergaon . .	1,016	12/28′×56′	..	2,000	N.A.
16.	Lakshmiwadi .	1,016	15/30′×60′	..	1,500	88·0
17.	Malegaon . .	1,016	15/25′×48′	1,500	1,500	22·78
18.	Nira . . .	1,016	12/28′×56′	..	1,500	39·58
19.	Sakarwadi . .	1,016	15/25′×49′	..	Data not	received
20.	Sangli . . .	1,016	15/26′×48′	2,600	3,000/ 3,500	N.A.
21.	Saswadmali .	1,016	18/25′×48′	..	1,200	12·08
22.	Tilaknagar . .	1,016	18/25½″×48′	1,700	2,000	89·39
23.	Warnanagar . .	1,016	15/25′×48′	1,500	2,000	89·39
24.	Rahuri . .	1,219	15/25′×48′	1,500	3,000	N.A.
25.	Ravalgaon . .	1,219	18/24′×48′	..	..	31·35**
26.	Karad . .	1,270	12/28′×56′	1,750	2,000	N.A.
27.	Shreepur . .	1,321	15/29′×57′	..	..	17·28**
28.	Walchandnagar .	1,422	18/28′×56′	1,750	1,778	31·50
29.	Pravaranagar .	1,473	15/30½′×60″	2,000	Data not	received
30.	Kolhapur . .	1,727	15/34′×66′	2,200	3,000	26·00

N.A.=Not Available.

*New plant of 1,270 tonnes is under erection.

**For balancing and some replacements only.

SOURCE—Factory Returns.

TABLE VI-A

Existing Strength of Labour and Labour Considered Surplus at Present and After Mordernisation

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Total labour employed	Labour surplus now		Labour surplus after expansion/modernisation	
				Skilled & semi-skilled	Unskilled	Skilled & semi-skilled	Unskilled
1	2	3	4	5	6	7	8
1.	Belvandi	305	N.A.	N.A.	N.A.	N.A.	N.A.
2.	Bhawaninagar	813	657	Nil	Nil	Nil	67
3.	Changdeonagar	813	425	Nil	Nil	Nil	Nil
4.	Phaltan (Sakharwadi)	813	578	Nil	Nil	12	24
5.	Girna	1,016	746	Nil	Nil	37 in all	
6.	Phaltan (Shriram)	1,016	793	Nil	Nil	Nil	Nil
7.	Akluj	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	1,016	904	Nil	Nil	Nil	Nil
9.	Bhogawati	1,016	718	33	12	Nil	Nil
10.	Bidri	1,016	399	Nil	Nil	Nil	Nil
11.	Ganeshnagar	1,016	629	Nil	Nil	Nil	Nil
12.	Gangapur	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
13.	Harigaon	1,016	646	Nil	Nil	7	59
14.	Ichalkaranji	1,016	874	Nil	Nil	Nil	Nil
15.	Kopergaon	1,016	874	Not determined			
16.	Lakshmiwadi	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	1,016	800	Nil	Nil	Nil	Nil
18.	Nira	1,016	435	Nil	Nil	Nil	Nil
19.	Sakarwadi	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1,016	382	Nil	Nil	Nil	Nil
21.	Saswadmali	1,016	1,000	Nil	Nil	Nil	23
22.	Tilaknagar	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	1,016	745	Nil	Nil	Nil	Nil
24.	Rahuri	1,219	806	Nil	Nil	Nil	Nil
25.	Ravalgaon	1,219	706	Nil	Nil	Nil	30
26.	Karad	1,270	N.A.	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	1,321	981	Nil	Nil	Nil	Nil
28.	Walchandnagar	1,422	668	Nil	Nil	Nil	Nil
29.	Pravaranagar	1,473	N.A.	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	1,727	1,164	7	77	Nil	Nil
			15,930 (for 22 fys.)	40	89	259 in all	

N.A.—Not Available.

SOURCE—Factory returns.

TABLE VI-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Man days/tonne of sugar 1959-60	1960-61	1961-62	1962-63
1	2	3	4	5	6	7
1.	Belvandi . . .	305	N.A.	N.A.	N.A.	N.A.
2.	Bhawaninagar . . .	813	8·93	8·59	8·53	9·18
3.	Changdeonagar . .	813	5·50	4·96	4·96	4·94
4.	Phaltan (Sakharwadi) .	813	6·62	7·87	7·06	6·18
5.	Girna	1,016	9·39	7·34	7·03	7·14
6.	Phaltan (Shriram) . .	1,016	9·57	8·60	7·61	7·20
7.	Akluj	1,016	..	..	..	N.A.
8.	Ashoknagar . . .	1,016	9·52	8·13	8·67	7·81
9.	Bhogawati . . .	1,016	8·95	7·34	6·47	6·42
10.	Bidri	1,016	..	..	..	10·81 (Trial season)
11.	Ganeshnagar . . .	1,016	6·47	6·09	5·85	5·46
12.	Gangapur . . .	1,016	N.A.	N.A.	N.A.	N.A.
13.	Harigaon . . .	1,016	4·88	5·03	4·86	4·78
14.	Ichalkaranji . . .	1,016	11·93	8·91	7·86	7·75
15.	Kopergaon . . .	1,016	8·49	7·88	7·40	7·32
16.	Lakshmiwadi . . .	1,016	N.A.	N.A.	N.A.	N.A.
17.	Malegaon . . .	1,016	8·79	7·27	6·97	7·63
18.	Nira	1,016	..	..	..	20·26 (Trial season)
19.	Sakarwadi . . .	1,016	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1,016	4·81	3·69	3·48	2·62
21.	Saswadmali . . .	1,016	10·26	10·36	10·39	10·29
22.	Tilaknagar . . .	1,016	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar . . .	1,016	13·06 (First season)	6·98	6·84	5·69
24.	Rahuri	1,219	7·32	7·41	7·38	7·47
25.	Ravalgaon . . .	1,219	7·72	7·53	6·57	7·82
26.	Karad	1,270	N.A.	N.A.	N.A.	N.A.
27.	Shreepur . . .	1,321	9·93	9·50	8·71	8·53
28.	Walchandnagar . .	1,422	4·35	4·76	4·69	4·52
29.	Pravaranagar . . .	1,473	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur . . .	1,727	7·60	5·48	4·85	5·08

N.A.=Not Available.

SOURCE=Factory Returns.

सत्यमेव जयते

TABLE VII-A

Utilisation of By-products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (average of 5 seasons)			
			Production (000 tonnes)	Used as fuel (000 tonnes)	Saved & sold (tonnes)	Value realised Rs.
1	2	3	4	5	6	7
1.	Belvandi	305	9·00	9·00	Nil	Nil
2.	Bhawaninagar	813	29·23	29·23	Nil	Nil
3.	Changdeonagar	813	27·77	27·77	Nil	Nil
4.	Phaltan (Sakharwadi)	813	29·45	29·45	Nil	Nil
5.	Girna	1,016	30·72	30·72	Nil	Nil
6.	Phaltan (Shriram)	1,016	36·20	35·64	562	17,798
7.	Akluj	1,016	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	1,016	41·98	41·88	100	1,120
9.	Bhogawati	1,016	25·10	25·10	Nil	Nil
10.	Bidri	1,016	2·61 (Trial season)	2·61	Nil	Nil
11.	Ganeshnagar	1,016	42·05	42·05	Nil	Nil
12.	Gangapur	1,016	23·07	23·07	Nil	Nil
13.	Harigaon	1,016	44·69	43·94	752	N.A.
14.	Ichalkaranji	1,016	25·90	25·90	Nil	Nil
15.	Kopergaon	1,016	58·27	58·27	Nil	Nil
16.	Lakshmiwadi	1,016	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	1,016	40·31	40·31	Nil	Nil
18.	Nira	1,016	2·14 (Trial season)	2·14	Nil	Nil
19.	Sakarwadi	1,016	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1,016	33·20	32·75	455	N.A.
21.	Saswadmali	1,016	34·21	34·21	Nil	Nil
22.	Tilaknagar	1,016	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	1,016	28·49	28·49	Nil	Nil
24.	Rahuri	1,219	43·26	43·26	Nil	Nil
25.	Ravalgaon	1,219	31·78	31·78	Nil	Nil
26.	Karad	1,270	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	1,321	41·00	41·00	Nil	Nil
28.	Walchandnagar	1,422	56·14	56·14	Nil	Nil
29.	Pravaranagar	1,473	N.A. ..	N.A.	N.A.	N.A.
30.	Kolhapur	1,727	51·07	51·07	Nil	Nil
			787·64 (for 24 fys.)	785·78	1,869 (for 4 fys.)	

N.A.—Not available.
SOURCE—Factory Returns.

TABLE VII-B

Utilisation of By-Products (Molasses)

Sl. No.	Name of Factory	Capacity tonnes/ day).	Molasses (average of 5 seasons)			
			Production (000 tonnes)	Quantity utilised for distillery and trade (000 tonnes)	Surplus left (tonnes)	Value realised (000 Rs.)
1.	Belvandi	305	1·16	1·16	Nil	N.A.
2.	Bhawaninagar	813	3·89	3·89	Nil	23·53
3.	Changdeonagar	813	3·91	N.A.	N.A.	N.A.
4.	Phaltan (Sakharwadi)	813	4·69	4·08**	613	N.A.
5.	Girna	1016	5·35	N.A.	N.A.‡	N.A.
6.	Phaltan (Shriram)	1016	4·69	N.A.	N.A.	12·65
7.	Akluj	1016	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	1016	5·60	4·01	1592‡	19·45
9.	Bhogawati	1016	4·40	2·29	2112‡	8·15
10.	Bidri	1016	0·36*	0·36	Nil	N.A
11.	Ganeshnagar	1016	6·33	4·79†	1542‡	N.A.
12.	Gangapur	1016	4·42	4·42†	Nil	N.A.
13.	Harigaon	1016	6·48	6·48†	Nil	N.A.
14.	Ichalkaranji	1016	4·37	1·27	3100‡	8·87
15.	Kopergaon	1016	7·34	3·20	4142	19·09
16.	Lakshmiwadi	1016	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	1016	5·46	N.A.	N.A.	N.A.
18.	Nira	1016	0·33*	0·33	Nil	1·61
19.	Sakarwadi	1016	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1016	5·40	N.A.	N.A.‡	N.A.
21.	Saswadmali	1016	5·64	N.A.	N.A.‡	N.A.
22.	Tilaknagar	1016	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	1016	4·26	1·73	2530‡	5·71
24.	Rahuri	1219	5·91	5·91†	Nil	N.A.
25.	Ravalgaon	1219	5·09	@	Nil	Nil
26.	Karad	1270	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	1321	6·37	4·63	1746‡	N.A.
28.	Walchandnagar	1422	7·10	7·10	Nil	N.A.
29.	Pravaranagar	1473	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	1727	7·31	7·31	Nil	N.A.
		(for 24 fys.)	115·86		17377	

*Trial season.

**Some utilised as manure.

†Some was exported

@All molasses used as fuel.

‡Partly or wholly destroyed.

N.A.=Not Available.

SOURCE=Factory Returns.

TABLE VII-C

Utilisation of By- Products (Press-mud)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Press--mud (average of 3 seasons)			
			Production (000 tonnes)	Sold or utilized as manure (000 tonnes)	Surplus left (tonnes)	Value realised Rs.
1.	Belvandi	305	0·65	0·65	Nil	N.A.
2.	Bhawaninagar	813	2·14	2·14	Nil	N.A.
3.	Changdeonagar	813	3·08	3·08	Nil	Utilised in own farm
4.	Phaltan (Sakharwadi)	813	5·04	5·04	Nil	N.A.
5.	Girna	1,016	5·07	5·07	Nil	N.A.
6.	Phaltan (Shriram)	1,016	5·18	N.A.	N.A.	2,500
7.	Akluj	1,016	N.A.	N.A.	N.A.	N.A.
8.	Ashoknagar	1,016	4·73	4·73	Nil	500
9.	Bhogawati	1,016	3·60	3·60	Nil	2,200
10.	Bidri	1,016	0·21 (Trial season)	0·21	Nil	N.A.
11.	Ganeshnagar	1,016	5·73	5·73	Nil	1,160
12.	Gangapur	1,016	3·54	3·54	Nil	N.A.
13.	Harigaon	1,016	4·34	4·34	Nil	N.A.
14.	Ichalkaranji	1,016	4·81	4·01	800	3,800
15.	Kopergaon	1,016	5·78	5·78	Nil	6,000
16.	Lakshmiwadi	1,016	N.A.	N.A.	N.A.	N.A.
17.	Malegaon	1,016	6·03	N.A.	N.A.	N.A.
18.	Nira	1,016	0·19 (Trial season)	0·19	Nil	N.A.
19.	Sakarwadi	1,016	N.A.	N.A.	N.A.	N.A.
20.	Sangli	1,016	4·74	4·74	Nil	N.A.
21.	Saswadmali	1,016	3·47	3·47	Nil	N.A.
22.	Tilaknagar	1,106	N.A.	N.A.	N.A.	N.A.
23.	Warnanagar	1,106	4·39	1·68	2,707	4,570
24.	Rahuri	1,219	5·15	5·15	Nil	N.A.
25.	Ravalgaon	1,219	3·98	After wax extraction, utilised as manure.		
26.	Karad	1,270	N.A.	N.A.	N.A.	N.A.
27.	Shreepur	1,321	3·20	3·20	Nil	Utilised in own farm.
28.	Walchandnagar	1,422	7·18	7·18	Nil	Do.
29.	Pravaranagar	1,473	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	1,727	7·83	7·83	Nil	Utilised in own farm.

N.A.=Not Available.
SOURCE=Factory Returns.

TABLE VIII-A

Profits After Tax of Loss or the Factories During the Ten Years Ending 1961-62

(Amounts in lacs of rupees)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1.	Belvandi	3·43	—1·49	2·35	1·49	5·81	10·60	0·76	4·85	—2·58	3·85	29·07	2·91
2.	Bhawaninagar					2·50	3·24	1·81	1·43	1·95	0·92	11·85	1·97
3.	Changdeonagar	2·25	0·93	7·00	5·98	5·91	6·05	10·22	9·72	11·50	11·32	70·88	7·09
4.	Phaltan (Sakharwadi)	10·94	12·49	8·96	9·78	13·04	11·57	11·45	9·07	4·65	3·70	95·65	9·56
5.	Girna*												
6.	Phaltan (Shriram)*												
7.	Akluj									—0·11	—1·00	—1·11	—0·55
8.	Ashoknagar						—0·93	—0·88	1·42	2·57	1·75	3·93	0·79
9.	Bhogawati								—8·00	—12·65	—3·05	—23·70	—7·90
10.	Bidri									—0·06	—1·52	—1·58	—0·79
11.	Ganeshnagar						—0·49	0·07	2·24	1·43	1·70	4·95	0·99
12.	Gangapur							—23·08	—5·68	—4·35	4·67	—28·44	—7·11
13.	Harigaon	24·79	30·74	32·69	31·34	47·15	31·62	19·99	37·17	34·46	23·04	312·99	31·30
14.	Ichalkaranji							—4·57	0·30	1·42	1·10	—1·75	—0·44
15.	Kopergaon				—0·98	3·54	3·71	2·21	2·20	2·68	2·70	16·06	2·29
16.	Lakshmiwadi	5·44	1·26	7·99	—2·05	27·66	11·92	18·63	34·02	39·50	30·80	175·17	17·52@
17.	Sakarwadi												
18.	Malegaon						1·56	1·87	1·84	2·68	2·33	10·28	2·05
19.	Nira**												
20.	Sangli							—1·48	—7·27	—6·57	1·46	—13·86	—3·46
21.	Saswadmali	1·00	5·01	2·94	2·49	9·92	5·13	11·16	6·85	7·14	4·32	55·96	5·60
22.	Tilaknagar	15·37	18·86	16·00	17·70	22·27	31·53	N.A.	27·39	33·15	18·57	200·84	22·32

TABLE VIII-A—(*contd.*)

1	2	3	4	5	6	7	8	9	10	11	12	13	14
23.	Warananagar							—2·33	0·02	—25·31	1·75	—25·87	—6·47
24.	Rahuri						—0·09	0·11	1·76	2·50	1·59	5·87	1·17
25.	Ravalgaon*												
26.	Karad									—4·22	0·21	—4·01	—2·00
27.	Shreepur	5·60	2·96	2·26	7·78	26·95	13·29	8·15	10·19	7·33	9·43	93·94	9·39
28.	Walchandnagar*												
29.	Pravaranagar	2·36	2·94	2·55	2·30	2·66	4·49	2·98	5·84	2·41	2·01	30·54	3·05
30.	Kolhapur	2·67	5·18	5·61	11·15	8·98	7·54	12·79	0·35	11·63	12·08	78·98	7·90
	AVERAGE .	6·80	7·17	8·03	7·25	13·57	8·28	3·49	6·17	4·45	5·35	—	6·57

*Balance Sheets not received/Profit loss figures not available in Balance Sheets.

**New Factory.

@Rs. 8·76 lacs per factory.

N.A.=Not Available.

NOTE.—Determination of income tax on profits is a very elaborate process and it has not been possible for this Committee to assess the exact position. Fifty per cent of the gross profits has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII-B

Profitability of the Factories in Different Capacity Slabs

(Amounts in lacs of Rs.)

Sl. No.	Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available	Total profit or Loss for the above period	Average profit or loss per year	No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year
1	2	3	4	5	6	7	8	9	10	11
	Factories with capacities upto 749 *Tonnes—*									
1.	Belvandi	5	11·59	2·32	5	17·48	3·50	10	29·07	2·91
	No. of factories showing Profit	1			1			1		
	Average Profit per year per factory . . .			2·32			3·50			2·91
	Factories with capacities between 750 and 999 tonnes—									
1.	Bhawaninagar	1	2·50	2·50	5	9·35	1·87	6	11·85	1·97
2.	Changdeonagar . .	5	22·07	4·41	5	48·81	9·76	10	70·88	7·09
3.	Phaltan (Sakharwadi) . .	5	55·21	11·04	5	40·44	8·09	10	95·65	9·56
	No. of factories showing profit . .	3			3			3		
	Average Profit per year per factory . .			+7·25			+6·56			+6·86
	Factories with capacities of 1000 *tonnes and above.—*									
1.	Akluj				2	—1·11	—0·55	2	—1·11	—0·55

TABLE VIII-B.—*contd.*

1	2	3	4	5	6	7	8	9	10	11
2.	Ashoknagar . .				5	3·93	0·79	5	3·93	0·79
3.	Bhogawati . . .				3	—23·70	— 7·90	3	—23·70	—7·90
4.	Bidri . . .				2	—1·58	—0·79	2	—1·58	—0·79
5.	Ganeshnagar . .				5	4·95	0·99	5	4·95	0·99
6.	Gangapur . .				4	—28·44	—7·11	4	—28·44	—7·11
7.	Harigaon . . .	5	166·71	33·34	5	146·28	29·26	10	312·99	31·30
8.	Ichalkaranji . .				4	—1·75	—0·44	4	—1·75	—0·44
9.	Kopergaon . .	2	2·56	1·28	5	13·50	2·70	7	16·06	2·29
10.	Lakshmiwadi } . .	5	40·30	8·06*	5	134·87	26·97*	10	175·17	17·52*
11.	Sakarwadi . .									
12.	Malegaon . . .				5	10·28	2·05	5	10·28	2·05
13.	Sangli . . .				4	—13·86	—3·46	4	—13·86	—3·64
14.	Saswadmali . .	5	21·36	4·27	5	34·60	6·92	10	55·96	5·60
15.	Tilaknagar. . .	5	90·20	18·04	4	110·64	27·66	9	200·84	22·32
16.	Warnanagar . .				4	—25·87	—6·47	4	—25·87	—6·47
17.	Rahuri . . .				5	5·87	1·17	5	5·87	1·17
18.	Karad . . .				2	—4·01	—2·00	2	—4·01	—2·00
19.	Shreepur . . .	5	45·55	9·11	5	48·39	9·68	10	93·94	9·39
20.	Pravaranagar . .	5	12·81	2·56	5	17·73	3·54	10	30·54	3·05
21.	Kolhapur . . .	5	34·59	6·92	5	44·39	8·88	10	78·98	7·90
	No. of factories showing Loss . .				8			8		
	No. of factories showing Profit .	9			13			13		
	Average Profit or Loss per year per factory . .			+9·86			+5·34			+6·79

*Total for both the factories.

TABLE VIII-C

Dividends Paid on Ordinary Shares by the Factories Since 1952-53

(MAHARASHTRA)

(Per cent paid up capital)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
1.	Belvandi	—	—	20·00	20·00	40·00	100·00	20·00*	10·00*	Nil	3·00*
2.	Bhawaninagar					N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
3.	Changdeonagar	12·00	8·00	16·00	40·00	18·00	18·00	23·20*	20·00*	20·00*	20·00*
4.	Phaltan (Sakharwadi)	12·00	16·00	16·00	18·00	18·00	20·00	27·00*	24·00*	18·00*	14·00*
5.	Girna@										
6.	Phaltan (Shriram)@										
7.	Akluj									—	—
8.	Ashoknagar						Nil	Nil	Nil	6·00*	3·00*
9.	Bhogawati								—	—	—
10.	Bidri									—	—
11.	Ganeshnagar						N.A.	N.A.	N.A.	N.A.	N.A.
12.	Gangapur							—	—	—	—
13.	Harigaon	32·00	32·00	32·00	32·00	36·00	36·00	42·00*	58·00*	50·00*	40·00*
14.	Ichalkaranji							—	—	—	—
15.	Kopergaon				—	—	3·00	4·00*	4·00*	4·00*	4·50*
16.	Lakshmiwadi }	10·00	Nil	12·50	16·00	20·00	12·50	20·00*	35·00*	42·50*	20·00*
17.	Sakarwadi }										
18.	Malegaon						N.A.	N.A.	N.A.	N.A.	N.A.
19.	Nira**										
20.	Sangli							—	—	—	—
21.	Saswadmali	Nil	Nil	Nil	Nil	6·00	9·00	12·00*	18·00*	15·00*	6·00*
22.	Tilaknagar	@	@	@	@	@	@	@	@	21·00*	28·00*

TABLE VIII-C—*contd.*

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
23.	Warananagar . . .							—	—	—	—
24.	Rahuri								—	—	—
25.	Ravalgaon@ . . .										
26.	Karad									Nil	Nil
27.	Shreepur	3·00	10·00	10·00	10·00	10·00	12·50	20·00*	20·00*	20·00*	20·00*
28.	Walchandnagar@ . .										
29.	Pravaranagar . . .	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
30.	Kolhapur	6·00	6·00	12·00	18·00	18·00	18·00	20·00*	20·00*	20·00*	20.00*

*Subject to Income tax.

**New Factory.

N.A.=Information not available in Balance Sheets.

@—Balance sheets not received.

— =Nil

MYSORE

1. GENERAL ASPECTS

1.1 The Mysore State consists of 19 districts and is situated between latitude 12·6° to 18·6° (N) and longitude 75·3° to 78·5° (E). There are, at present, eight working sugar factories in the State situated in five districts, *viz.*, Belgaum, Bellary, Mandya, Raichur and Shimoga.

The average yearly rainfall in Mysore State is 102 cms. which is concentrated largely during the South West monsoon period of June to October. The State can be broadly divided into (*i*) Malnad zone, and (*ii*) Maidan zone. In the Malnad zone, the rainfall is as heavy as 254 cms. whereas in the Maidan zone, there are areas which receive only about 25 cms. on the average per year.

The range of minimum and maximum temperatures is about 11°C (in December) and 39°C (in April) respectively. The relative humidity during the year varies from 45 per cent to 90 per cent in the coastal areas.

Important crops of the State are paddy, jola, ragi, groundnut, cotton, sugarcane and tobacco.

1.2 Area, density of population, agricultural and industrial employment and economic condition of people

The total area of the State is 1,93,949 sq. kms. and the average density of population is 121 per sq. kilometre. In a total population of 23·55 millions in the State, there are about 18 lac agricultural workers and 1·5 lac industrial workers. Percentage of workers in the sugar industry to the industrial workers is about 6,0. Per capita income for the year 1960-61 has been estimated at Rs. 304·71 at current prices.

1.3 Importance of sugarcane crop and sugar industry

Sugarcane has been grown in this State for long. It is one of the important cash crops of the State and is grown in almost all the Districts, especially in the irrigated tracts as it is ideally suited as a rotational crop with paddy. Out of 3,11,77,312 acres of total cultivable land in the State, about 1·74 lac acres is, at present, under sugarcane which forms about 2·7 percent of the total area under cane in whole of the country. There is sufficient scope for its extensive cultivation under the new irrigational projects which are under various stages of implementation and also under active consideration for being taken up in the Fourth Plan period. This important crop, besides providing substantial revenue to the State as well as the national exchequer, has been enabling the cane growers to obtain quite a significant margin of income as compared to other crops.

The sugar industry occupies quite a significant position in the industrial structure of the State. It sustains about 26,000 cultivators and nearly 9,000 workers besides a large number of persons carrying on small trades in the vicinity of the factories. The sugar industry pays about Rs. 7 crores annually to the cane growers of the State and the Central and State Governments derive an income of about Rs. 3·9 crores as Excise Duty and Rs. 1 crore as purchase tax respectively.

1.4 Establishment and growth of the sugar industry in Mysore

The number of sugar factories working in the various years since 1956-57 was as follows:

Year	No. of working factories
1956-57	4
1957-58	6
1958-59	6
1959-60	7
1960-61	8
1961-62	8
1962-63	8

Prior to 1956 *i.e.* before reorganisation of the States, some of the factories that are at present in Mysore State used to be grouped in the then Madras and Bombay States.

It may be seen from the above that in the year 1956-57 there were only 4 working factories, three of them being in private sector and one a Government Company. In 1957-58, two more factories started working—one of these being in private sector (Shimoga—old plant shifted from Africa) and another being a co-operative factory. Two more co-operative factories subsequently started working and since 1960-61 eight factories have been working—four of these being in private sector, three in the co-operative sector and the remaining one a Government Company. One factory *viz.*, Krishna Sugar Mills is under liquidation since 1952.

One more factory *viz.*, M/s. Gauribidanur Sahakari Sakhar Karkhana Ltd., Gauribidanur, District Kolar, which was licensed against Third Plan target for a crushing capacity of 1016 tonnes/day is under erection.

1.5 Distribution of sugar factories in Mysore

The distribution of the eight factories working at present in the various districts and their existing daily cane crushing capacities are as follows—

Sl. No.	Name of the District	Name of Factory	Existing daily cane crushing capacity in tonnes (1963-64 season)
1.	Belgaum	Sankeshwar	1,270
		Ugar khurd	813
2.	Bellary	Kampli	813
		Hospet	1,016
3.	Mandya	Pandavapura	813
		Mandya	1,422
4.	Raichur	Munirabad	610
5.	Shimoga	Shimoga	1,016

1.6 Cane development

A comprehensive Sugarcane Development Scheme is in force in the State. For this purpose there are 16 centres in the Third Five Year Plan, covering 13 districts. The entire State is proposed to be covered in the Fourth Five Year Plan by organising 8 more centres. The main work of the staff under this scheme is demonstration of improved practices of cane cultivation by organising demonstration plots on cane growers' fields, control of pests and diseases, varietal survey and planting-wise survey, organising seed nurseries at secondary and tertiary levels and organising crop competitions at district, State and all India levels. The yield survey is also conducted on about 100 plots in each centre. In addition, assessment of yields in various demonstration plots like manurial and half field demonstration plots, etc., are being done. Demonstration plots of seed treatment and the use of weedicides are being popularised by the development staff.

It is contemplated to implement the intensive sugarcane development in the four co-operative sugar factory areas, *viz.*, (i) Pandavapura, (ii) Kampli, (iii) Sankeshwar and (iv) Gauribidanur (under erection). The total estimated cost of the scheme will be about Rs. 6 lacs per year and is designed to cover a period of 3 years, to begin with. To meet this cost, it has been proposed that the State Government may meet about 1/3rd, the Central Government another 1/3rd and the remaining 1/3rd will be met by the beneficiaries of the scheme, *viz.*, the sugar factories and the sugarcane growers.

1.7 Amount of cess/purchase tax collected and spent on cane development activities

The amount of cess/purchase tax realised by the State Government and expenditure incurred therefrom on sugarcane research and development during the last six years was as follows:

Year	Cess/ purchase tax collected Rs.	Amount spent (Rs.)		
		on research	on development work	on road works
1957-58	40,03,631	16,567	18,778	17,13,313
1958-59	48,68,901	30,846	62,608	14,08,875
1959-60	47,83,548	1,44,761	93,531	7,56,510
1960-61	68,05,489*	2,61,482	1,05,130	22,63,930
1961-62	66,02,597	3,14,000	1,02,500	28,66,550
1962-63	61,38,002	4,86,100	1,63,100	28,85,095

*Upto 30th Sept. 1961, the cess was charged at the rate of Rs. 6/- per ton and thereafter it was substituted by a Purchase tax at 15 per cent of the value of cane.

2. Technical Aspects

2.1 Area under sugarcane, and yield per acre

Each sugar factory in Mysore has assigned to it a specified area from which it can draw its cane supplies. These areas change from year to year depending upon the requirements of the factories. There are no clearly defined permanent reserved zones for this purpose.

The position with respect to the area under cane in sugar factory zones is given in Table I-A and estimated yield per acre in Table I-B.

It will be seen from the figures given in these tables that (i) while in the season 1960-61 and 1961-62 the area under cane has been more or less steady it has gone down considerably in 1962-63 probably due to 10 per cent cut imposed on sugar production and (ii) the yield per acre ranged between 28-33 tonnes for the whole state and 32-38 tonnes in development zones.

2.2 Cane supplies to sugar mills

The percentage of cane utilised for white sugar manufacture is given in Table I-C, the actual supplies made to sugar factories in Table I-D and the percentage of cane supplied at the gate, road and rail centres in Table I-E.

It will be seen from Table I-C that average supplies of cane to sugar mills in the State have generally varied from 70 per cent to 100 per cent of the total cane produced in their zones except in case of Sankeshwar and Ugar factories. In case of these latter factories, the supplies have ranged between 25 to 40 per cent of the total production.

Table I-D shows that the actual supplies to the existing 8 sugar factories from 1960-61 to 1962-63 have varied from 1056·55 thousand tonnes to 1305·95 thousand tonnes being the highest in the year 1961-62. The supplies were the lowest in 1962-63 which may be attributed to reduction in acreage on account of 10 per cent cut imposed on production by the Government in view of the surplus sugar position then obtaining in the country, reduction in yield in some factory areas and some diversion of cane for jaggery manufacture.

It will be seen from Table I-E that in the case of all the factories except Mandya, cent per cent cane is supplied at the factory gate which is a happy position and ensures fresher supplies at minimum transport cost. The Mandya factory, however, has 13 per cent rail cane and 25 per cent out centre (road) cane. The number of growers supplying cane to the factories is about 26,000.

2.3 Irrigation, application of manures and fertilizers and supply of cane seed

The position with regard to irrigation, supply of manures and fertilisers and supply of cane seed is given in Tables II-A, II-B and II-C respectively.

It will be seen that cane areas in most of the factories are fully saturated. Only some of the area of Munirabad factory still needs irrigation facilities and some area of Ugar factory is to be supplied with irrigation through surface wells and *rahats* or pumping sets.

As regards supply of manures and fertilisers the requirements are being largely met but there is some difficulty about the procedure of distribution.

The cane seed requirements are being met by factory farms and cultivators themselves.

2.4 Means of communication

Table II-D shows the position with regard to means of communication at present available and still needed in the various factory zones.

It will be seen that all the factory zones are considerably deficient in respect of roads and further requirement in all the eight factory areas comes to as much as about 1500 kilometres.

The requirement of bridges and culverts is substantial in the Sankeshwar and Mandya factory areas.

2.5 Duration of season, cane crushed, sugar made and average recovery

The position with respect to average duration of season, cane crushed, sugar produced and average recovery recorded during the preceding seven years is as follows:—

Year	Average duration (22 hrs.)	Cane Crushed (lac tonnes)	Sugar made (lac tonnes)	Average recovery % cane
1956-57	121	4·73	0·43	9·11
1957-58	124	7·23	0·74	10·28
1958-59	139	8·30	0·86	10·36
1959-60	118	8·22	0·88	10·65
1960-61	179	11·93	1·21	10·13
1961-62	173	13·06	1·38	10·58
1962-63	146	11·35	1·26*	11·14*

*(includes raw sugar also)

It will be seen that during the last seven years, the average duration (22 hrs.) has varied from 118 days in 1959-60 to 179 days in 1960-61. The maximum recovery has been 11·14 in 1962-63.

2.6 Sugar production

The position with regard to the number of working factories, their registered capacity, production of sugar in tonnes and sugar produced per 100 tonnes of registered capacity is shown below:—

Year	No. of working factories	Total registered cane crushing capacity per day in tonnes	Production of sugar in tonnes	Production of sugar per 100 tonnes registered capacity (tonnes)
1950-51	4	2,642	20,188	764·1
1951-52	5	2,865	59,817	2,087·8
1952-53	4	2,662	45,460	1,707·7
1953-54	4	2,662	18,155	682·0
1954-55	4	2,662	73,266	2,752·3
1955-56	4	3,068	58,358	1,902·1
1956-57	4	3,861	43,068	1,115·5
1957-58	6	5,690	74,350	1,306·7
1958-59	6	5,690	85,999	1,511·4
1959-60	7	6,502	87,547	1,346·5
1960-61	8	7,772	120,882	1,555·3
1961-62	8	7,772	137,579	1,770·2
1962-63	8	7,772	126,408*	1,626·4

*includes raw sugar also.

Maximum production of sugar in the State was 1·38 lac tonnes in 1961-62. The maximum production per 100 tonnes of registered capacity was 2752·3 tonnes in 1954-55 and minimum was 682·0 tonnes in 1953-54.

The consumption of sugar in Mysore State in 1961-62 was about 1·36 lac tonnes. The State is thus surplus by about 2000 tonnes.

2.7 The age of the factory plants, their capacities and present condition of equipment

The following table gives the age of the various plants and their capacities :—

Sl. No.	Name of Factory	Year of Establishment	Age 1963 (years)	Original capacity (tons/day)	Existing daily cane crushing capacity (licensed) (tonnes/day). 1963-64 season	Actual maximum crushing rate per 24 hours operation attained in 1961-62 or 1962-63 (tonnes)
1.	Munirabad .	1952	11	300	610	636
2.	Kampli .	1957	6	800	813	925
3.	Pandavapura .	1959	4	800	813	877
4.	Hospet . .	1933	30	400	1,016	1,168
5.	Shimoga . .	1957*	N.A.	N.A.	1,016	683
6.	Sankeshwar .	1960	3	1,000	1,270	1,062
7.	Ugar Khurd .	1942	21	500	813	1,336
8.	Mandya . .	1933	30	400	1,422	1,561

*Shifted old plant from Africa; working at the present site started from 1957-58.

NOTE.—One more factory *viz.* Krishna Sugar Mills Ltd., of 200 tons per day capacity worked in the State from 1942-43 to 1951-52. In 1952 the factory closed down due to financial difficulties.

It will be seen that Mandya, Ugar Khurd, Hospet and Shimoga are old plants, being over 20 years old Munirabad is 11 years old while the rest three *i.e.*, Kampli, Pandavapura and Sankeshwar are new plants. The distribution in the various capacity range is as follows :—

below 800 tonnes . . .	1
800 to 1050 tonnes . . .	5
1050 to 1300 tonnes . .	1
1300 to 1500 tonnes . .	1

Table III-A gives important details of the milling plants. It will be seen from this table that all the factories except Hospet and Shimoga have got two sets of knives which are adequately powered, the mills of two factories are driven by steam turbines and of the remaining by steam engines and the power in the turbine/ engines is adequate in all the factories. One plant is of 11 rollers, 5 of 12 rollers each, 1 of 14 rollers and 1 of 15 rollers. There is thus ample scope for extension of the crushing capacities with the existing tandems.

Table III-B will show that Munirabad is fully steam driven unit and rest have semi-electric drive (one of them *viz.* Shimoga only partially). Except

Kampli, Pandavapura and Sankeshwar which have boilers of 290—320 p.s.i. pressure, all have boilers of 150—165 p.s.i. pressure (two of these factories having about 40 per cent of their total boilers H.S. on high pressure side). Only Kampli, Shimoga, Sankeshwar and Ugar are having economizers and all except Munirabad and Shimoga have got superheaters.

As regards the equipment in the boiling house, Tables III-C i, ii,iii and iv will show that Shimoga still has juice measurement and Munirabad has manually operated weighing equipment; no factory has got vapour line juice heater; Munirabad, Kampi, Hospet and Shimoga have batch sulphitation tanks and Munirabad, Hospet and Shimoga have batch filtration; Shimoga still has triple effect evaporator and vapour bleeding from evaporators is practised in all except Pandavapura; Munirabad and Shimoga still have coil pans to the extent of 13-14 per cent of their total pan capacity; all the factories except Munirabad, Hospet and Shimoga have adequate heat exchange capacity in low grade crystallizers and all but Munirabad have got high speed centrifugals.

2.3 Working results

The data with respect to (i) cane quality, (ii) time account, (iii) recovery and total losses and (iv) fuel consumption are given in Tables IV-A i, ii, iii, IV-B i, ii, IV-C, i, ii, iii & IV-D i, ii respectively.

It will be seen from Tables IV-A i, ii and iii that the average seasonal pol per cent cane in the last four years has varied from 11·92 to 14·88 with primary juice purity variation from 80·64 to 88·70. Factories which have recorded comparatively better cane quality are Pandavapura, Sankeshwar and Ugar Khurd. Fibre per cent cane is in general around 12·0 to 14·5 though in some years and in some factories it has been around 10·5 per cent and 16·8 per cent also.

Tables IV-B i & ii show the time-account. It will be seen that the duration of season in the year 1960-61 in all factories except Shimoga, Ugar and Sankeshwar (trial season) has been above 200 days, the actual duration being 218 days (in Kampli) to 280 days (in Mandya). The number of hours lost to total available are quite high in all factories except Mandya. The normal time loss should not exceed 10 to 12 per cent, but it will be seen that in almost all the factories except Mandya it is considerably above this figure.

Tables IV-C i & ii show the position of recovery and total losses. It will be seen that the factories which have comparatively better cane quality *viz.*, Pandavapura, Sankeshwar and Ugar Khurd have registered good recoveries ranging between 11·0 to 12·7 per cent cane whereas the rest of the factories generally have had recoveries of the order of 9·0—10·5 per cent cane.

Total losses in fifty per cent of the factories *viz.* Munirabad, Hospet, Shimoga and Mandya have ranged between 2·80 to 3·10 whereas in rest of the factories these have generally varied from 2·10 to 2·65. Ugar Khurd factory has recorded the lowest losses. In the matter of reduced overall extraction Table IV-C iii will show that the number of factories in the various efficiency groups are as follows:—

Red. overall Extraction	No. of factories
78-82	4
84 or above	4

It will thus be seen that four factories *viz.* Sankeshwar, Ugar, Pandavapura and Kampli have good efficiency while the rest have very poor overall efficiency.

From Tables IV-D i & ii will be seen the position with regard to fuel consumption. It will be noted that except Kampli, Pandavapura and Hospet (who have consumed negligible extra fuel) all other factories have consumed extra fuel. Munirabad, Sankeshwar and Ugar Khurd have had an extra fuel consumption of about 2—5 per cent on cane (in terms of bagasse), Mandya of about 5—7 per cent and Shimoga of 8—17 per cent cane. With proper fuel economy measures these factories should not only be able to avoid this extra consumption of fuel but also save bagasse.

Table V gives particulars of the existing daily cane crushing capacity of the factories, specifications of their existing milling tandem, expansion for which license has already been granted and expansion as asked for by the factories. Financial requirements for expansion and/or modernisation as communicated by the factories is also given.

2.9 Labour strength and productivity

Table VI-A shows the labour strength actually employed in Mysore factories, the labour considered surplus at present and the labour that would become surplus when schemes of expansion/modernisation become effective.

It will be seen that four factories have not submitted any estimate in this regard. Two factories out of the four who have submitted data do not have the problem of surplus labour. The remaining two factories have estimated that in all 260 workers are surplus under the existing conditions.

Table VI-B shows the productivity of each factory in terms of man days per tonne of sugar for four years. It will be seen that almost in all cases the productivity has been reasonable *viz.* 5·0 to 12·9 though in some years and in some factories it has been around 13·0 to 16·3 also. Sankeshwar which is the newest factory has recorded the best productivity.

2·10 Utilisation of by-products

Tables VII-A, VII-B and VII-C show the position with respect to utilisation of by-products.

As regards bagasse, it will be seen from table VII-A that only Kampli factory saved some bagasse and sold it and Mandya factory also sold some of bagasse to the nearby paper factory on substituted basis with fuel oil. All the remaining factories (data in respect of Pandavapura not available) used up their entire production of bagasse as fuel.

Table VII-B shows that factories have generally used up their entire production of molasses for the production of alcohol and for trade purposes. It appears that substantial quantities have been used for trade purpose as the value realised is appreciable.

Table VII-C will show that all the factories are utilising or selling away their press-mud for manurial purposes.

3. ECONOMIC ASPECTS

3.1 Financial set-up

The nature of ownership, the share capital, the reserves and net worth of the eight Mysore sugar factories as given in their Balance Sheets for 1961-62 are as follows:—

(In lacs of Rs.)

Name of Unit	Paid up capital			Reserves	Total net worth
	Original	Bonus issues	Total		
(i) Public Limited					
1. Munirabad	45·00	..	45·00	0·18	45·18
2. Hospet	58·99	15·99	74·98	15·97	90·95
3. Ugar	32·53	7·47	40·00	38·01	78·01
4. Mandya	21·79	..	21·79	118·73	140.52
TOTAL	158·31	23·46	181·77	172·89	354·66
(ii) Private Limited					
1. Shimoga	33·46	16·54	50·00	6·67	56·67
(iii) Co-operatives					
1. Kampli	40·16	..	40·16	20·28	60·44
2. Pandavapura*	31·47	..	31·47	31·60	63·07
3. Sankeshwar	36·63	..	36·63	4·69	41·32
TOTAL	108·26	..	108·26	56·57	164·83
GRAND TOTAL	300·03	40·00	340·03	236·13	576·16

*As per Balance Sheet of 1962-63

सत्यमेव जयते

It will be seen that out of the share capital of Rs. 3·40 crores, a sum of Rs. 0·40 crore has been subscribed as bonus shares, the remaining amount of Rs. 3·00 crores being the originally paid up capital. At the close of 1961-62, an amount of Rs. 2·36 crores was also available in reserves bringing the value of total networth to Rs. 5·76 crores. Thus the profits so far retained by Mysore factories in the form of bonus shares and reserves aggregate Rs. 2·76 crores which means an addition of 92 per cent to the initially paid up capital.

Financial analysis* has been made by this Committee for the years 1953-54, 1957-58 and 1961-62, on the basis of Balance Sheets received from sugar factories and the results are shown below:—

(Amounts in lacs of rupees)

Particulars	1953-54	1957-58	1961-62	Comparative Development	
				1957-58 over 1953-54	1961-62 over 1957-58
1. No. of units . . .	4	6	8	2	2
2. Gross Block . . .	237·07	524·48	944·69	287·41	420·21
3. Accumulated Depreciation	126·26	170·54	331·08	44·28	160·54
4. Net Block	110·81	353·94	613·61	243·13	259·67
5. Net Worth . . .	222·41	316·36	576·16	93·95	259·80
6. Surplus of net worth over net block	111·60	—37·58	—37·45	—49·18	0·13
7. Debentures & long term loans	..	118·84	233·76	118·84	114·92
8. Available resources . .	111·60	81·26	196·31	—30·34	115·05
9. Investments . . .	33·99	61·42	122·36	27·43	60·94
10. Investment as % of surplus net worth . . .	30·5	..	..	..	..
11. Net block as % of gross block	46·7	67·5	65·0	..	..

*Similar to the analysis made by the Tariff Commission in Paragraph 15·5 of their report on the cost structure of sugar (1959) for the years 1953-54 and 1957-58.

It will be seen that at the close of 1961-62, net investment in fixed assets was Rs. 6·14 crores *i.e.* Rs. 0·37 crore more than net worth of the industry. A sum of Rs. 2·33 crores was obtained by way of debentures and long term loans which left the industry with a surplus of Rs. 1·96 crores. Investment in the form of shares and debentures of other companies and in Government securities aggregated Rs. 1·22 crores and the balance of Rs. 0·74 crore was used mainly as working capital.

These figures are indicative of the development that has taken place during the last eight years. It will be seen that during the period of four years ending 1961-62, the industry has made a gross investment in fixed assets of the order of Rs. 4·20 crores as against Rs. 2·87 crores in the preceding four years. The fixed assets stand depreciated to the extent of about 35 per cent of the gross block only and the value of net block increased by Rs. 2·60 crores, bulk of which has come from the industry's internal resources. The industry has also drawn upon additional long term borrowings to the extent of Rs. 1·15 crores during these four years and invested a sum of Rs. 0·61 crore in shares and Government securities.

The foregoing analysis would show that on the whole there has been good efforts towards development of sugar industry in the State of Mysore.

3.2 Profit and loss position

The profit and loss position as revealed from Balance Sheets of Mysore sugar factories for the last ten years is given in Table VIII-A and it would generally indicate the financial position of the industry. It will be seen that on the whole there have been good profits and the average for 10 years works to Rs. 3·68 lacs per year per factory after payment of income tax; made up of an average profit of Rs. 4·66 lacs per year per factory for old factories and an average loss of Rs. 1·94 lacs for new factories.

Table VIII-B is based on a study of profit or loss made by factories in various capacity slabs during the two periods of 5 years each *viz.*, 1952-53 to 1956-57 and 1957-58 to 1961-62 and also for the entire period of 1952-53 to 1961-62. This position is summarised below:—

	1952-53 to 1956-57	1957-58 to 1961-62	1952-53 to 1961-62
(*i*) *Factories incurring losses*			
Number	1	1	2
Average loss per year per factory (In lacs of Rs.)	2·90	3·46	1·91
(*ii*) *Factories making profit*			
Number	3	6	5
Average profit per year per factory in lacs of Rupees)	3·14	7·16	6·29
(*iii*) *Total*			
Number	4	7	7
Average profit per year per factory (in lacs of Rupees)	1·63	5·19	3·68

सत्यमेव जयते

Table VIII-C shows the dividends paid by Mysore factories since 1952-53. It will be seen that good profitability has enabled the old factories of Mandya, Hospet and Ugar Khurd to declare substantial dividends. Munirabad factory which has sustained a loss of Rs. 11·31 lacs in the last 10 years and all the newly established factories have not declared any dividend.

4. SPECIFIC PROBLEMS OF SUGAR FACTORIES

1. Munirabad

1. Present distribution system of manures and fertilizers comes in the way of intensive cultivation.

2. Approach roads are bad.

3. Cane area is insufficient to cater to the capacity of 1000 tons/day.

4. Proposed Kamlapur Factory will further hit their cane supplies.

2. Kampli

1. Lack of approach and link roads.

2. Absence of feeder channels for irrigation purposes.

3. Pandavapura

1. Want of adequate roads.

2. Scarcity of labourers during planting and harvesting paddy season.

3. Diversion of cane for jaggery making.

4. Hospet

1. Problems of surplus labour because originally the plant was fully steam driven but later on it was converted into a semi-electric plant in 1956.

2. Bad roads in some places.

3. Setting up of a new factory at Kamlapur (6 miles away from Hospet) will jeopardize their cane supplies.

5. Shimoga

1. The area in which factory is located is not a cane growing area and growers are very slow in taking up the cane growing. This area is almost fully paddy growing area.

सत्यमेव जयते

2. The idea of selecting this area was that the State Government had promised 5,000 acres of cultivable land which ultimately has been reduced to 2,500 acres.

3. The granted 2,500 acres in all jungle land and have to be cleared up by heavy tractors and bulldozers. These tractors are less in number and due to tight foreign exchange position it is difficult to get them and also replacement parts for running the existing equipment.

4. Bad and inadequate roads for transport of cane.

5. Difficulty in the distribution of fertilizers. The village level society does not get fertilizers from Taluka Society because the society is defaulter.

6. Factory has informed that their final molasses could not be properly utilised because of Government restrictions on its sale to growers for cattle feed. Much of it is running to waste for want of storage space.

6. Sankeshwar

1. Diversion of cane for jaggery to the extent of 50—65 per cent of the total estimated production.

2. Transport is a bottleneck in their area.

3. Sankeshwar being situated on the border, some of its area lies in Maharashtra State. The sugarcane control order is not enforced in Maharashtra.

7. Ugar Khurd

1. There is no irrigation canal in factory's area. Factory has got their own pumping stations on the Krishna river and growers also lift water from the river. Numerous lift irrigation schemes have started on this river upstream of Ugar resulting in abnormal fall in the water level last year. The additional flow after completion of the 3rd stage at Koyna Dam is also uncertain due to dispute about Krishna river water.

2. Bad roads and want of approach roads.

3. Supply of all nitrogenous manures through the primary societies in the villages increases the cost of the manures by 9 to 10 per cent.

4. Diversion of cane for jaggery manufacture.

5. If Kittur Factory came up again it would affect their cane supplies.

8. Mandya

1. This is the longest run factory in India and crushing for long durations (due to its less capacity) has affected economy due to fall in recovery.

2. The condition of the roads is very bad.

3. High cost of road transport.

4. Time of 5 hours given at present for loading of wagons is not at all enough, as the same *ryots* are not able to make more number of trips in a day.

5. Adequate irrigation is not available.

6. Too much labour.

5. RECOMMENDATIONS

A study of the foregoing chapters reveals that in the Mysore State the climatic and soil conditions are quite favourable for the commercial cultivation of sugarcane. The average yield is about 35 tonnes per acre and the quality of cane in general is good. In two factory-zones, *viz.*, those of Sankeshwar and Ugar factories which lie near the border of the Maharashtra State, the quality of cane is quite as good as in the factory zones of high sugarcane quality of Maharashtra State. The seasonal average recovery is about 11·0 per cent.

As regards the condition of sugar factory plants, out of 8 plants working in 1963-64, four are old and four are new. The technical efficiencies recorded by four factories is quite satisfactory, but that of the remaining is rather low.

The capacities of three sugar factories in the State are below thousand tonnes and the remaining five lie between 1,000—1,500 tonnes.

Of the four old plants, three require a considerable degree of modernisation while one needs only minor additions and alterations.

Except for three factories which have duration of 110—140 days the others have long durations of 200 days or so. The State has now become surplus in sugar.

All factories are consuming extra fuel over and above the bagasse produced. The factories have no problems as regards the disposal of the by-products. Only one factory has some surplus labour.

The position in regard to cane development is also fairly satisfactory in as much as cane areas in most of the factories are fully saturated with irrigation. Only two factories, *viz.*, Ugar and Sankeshwar still require more wells and *rahats* and pumping sets. The supplies of manures and fertilizers are adequate, but the procedure for distribution requires modification.

The position with regard to communications is, however, not satisfactory. Not only do all factory areas require considerable lengths of *pucca* and feeder roads totalling as much as 1500 Kms. but the condition of roads in most factory areas is also unsatisfactory.

In regard to the supply of cane seed some of it is being supplied by sugar factory farms, but the rest of the requirement is arranged by the growers themselves. As such the supply of healthy seed of suitable varieties is not being ensured. The problem of diversion of sugarcane for the manufacture of *gur* does not exist except in two factories, *viz.*, Sankeshwar and Ugar.

In view of the above, the Committee feels that the problems of improving the economy of sugar factories in the Mysore State is fairly simple. The major steps to be taken would be as follows:—

1. Rehabilitation, modernisation and expansion

The extent of rehabilitation, modernisation and/or expansion to be carried out would be as given in the following table:—

Name of factory	Existing daily cane crushing capacity (tonnes) 1963-64 season	Capacity upto which extension license already granted (Tonnes)	Expansion as asked for by the factories (Tonnes)	Expansion as recommended by the Committee (Tonnes)
1. Munirabad	610	1,000	1,000	1,000
2. Kampli	813	1,500	1,500	1,500
3. Pandavapura	813	1,500	1,500	1,500
4. Hospet	1,016	1,250	1,500	1,500
5. Shimoga	1,016	..	1,500	1,500
6. Sankeshwar	1,270	1,750	1,750	1,750
7. Ugar Khurd	813	1,219	2,000	1,750
8. Mandya	1,422	2,500	4,000	4,000
TOTAL .	7,773			14,500

The Committee has estimated the total cost of rehabilitation, modernisation and expansion for the above factories as Rs. 4·3 crores. In effecting modernisation and/or expansion particular attention should be paid to such addition and alterations and balancing of plant as would be conducive to maximum fuel and steam economy.

As regards Krishna Kittur Factory a license for expansion to 400/450 tons was granted to it in 1953, but the company could not take advantage of it because it was wound up in 1952-53 due to financial difficulties.

The present promoters proposed a scheme of reconstruction of the company and this scheme was sanctioned by the High Court of Mysore in 1960. The present management thus took possession of the Company's factory and assets in 1960.

They have applied for a license of 1000/1250 tons which has not yet been sanctioned.

Regarding cane position, the factory has explained that there is sufficient cane area which will be irrigated as soon as the projects in hand are completed and if it is allowed to work there it would be able to get the desired supplies of cane without affecting the supplies of the Ugar Sugar Works.

The Committee is of the view that the revival of this unit amounts to setting up a new factory and if it has to come up its capacity should not be less than 1500 tonnes/day. Further it is also desirable that the Ugar Sugar Works is allowed to expand to 2000 tonnes. Thus while granting the license of 1500 tonnes per day to the Krishna Kittur Factory it should be seen that their location is such that it gets the full supplies of cane for a crush of 1500 tonnes/day and more in future and the supplies of Ugar Sugar Works for a crush of 2000 tonnes/day are not affected.

2. Cane development

(*a*) *Irrigation.*—Some of the cane area in the Munirabad factory remains to be irrigated. The State Government should examine how this could be done expeditiously. Sankeshwar and Ugar factories have indicated the need for putting up a large number of wells and *rahats* and pumping sets to irrigate the balance of their cane area. The Committee recommends that this need of the factories should be met expeditiously. It has further been brought to the notice of the Committee that water from the Krishna River is being drawn in large quantities up the stream so that supplies for the Ugar Factory are getting adversely affected. The drawal of water will, therefore, have to be regulated.

In the Kampli factory area, irrigation tanks, particularly Daroji tank, commanding over 1000 acres of cane area are to be provided with feeder channels from the high level main canal, which is in progress.

The lining of canals should be improved to avoid seepage loss.

(*b*) *Supply of Manures and Fertilizers.*—During the course of discussions, it has been pointed out to the Committee that the system of distribution of manures and fertilizers through the co-operative societies has not been satisfactory. The cost of the fertilizers increases by about Rs. 70/- per ton by the time it comes to the growers as it has to pass through a number of societies and distributing agencies and does not also reach them in time. It has, therefore, been suggested that the distribution of fertilizers should be through the sugar factories.

The Committee is of the opinion that for the manures and fertilizers to be adequately and effectively utilised, it is essential that they reach the cultivators well in time and at the least cost. The existing procedure obviously needs modification. If the distribution is done through the factories not only will the supplies be expeditious, but would also result in more direct and intimate contact between the factory and the growers which is most essential in the interest of cane development.

(*c*) *Communications.*—The requirement of roads, bridges and culverts as communicated to the Committee by the factories is as given below :

Sl. No.	Name of factory	Requirements		
		Pucca road in kms	No. of bridges	No. of culverts
1.	Munirabad	42	7	..
2.	Kampli	170	..	..
3.	Pandavapura	224	..	..
4.	Hospet	25	..	..
5.	Shimoga	320	4	..
6.	Sankeshwar	285	25	150
7.	Ugar Khurd	96	..	3
8.	Mandya	288	..	462
	TOTAL	1,450	36	615

The Committee recommends that the above requirements should be examined by the State Government and necessary steps taken to meet the full requirements as expeditiously as possible. The total cost of making these may be estimated at Rs. 8·38 crores. Lack of communications not only hinders cane supplies, but also results in the deterioration of cane quality and consequent loss of recovery.

3. Problems of surplus labour

There is no such problems in any factory except in Mandya. When the factory expands to 4,000 tonnes per day, all the surplus labour is expected to be absorbed.

4. Utilisation of by-products

The only possibility of utilisation of by-products towards reducing cost of production is to save bagasse by effecting proper steam and fuel economy and by expansion of capacities. If and when such a situation arises, neighbouring factories in the State could combine to put up chipboard and particle board plants.

5. General

During the course of discussions with the representative of the industry and the connected authorities of the State Government, several relevant points were placed before the Committee. These were:—

(*a*) Price of jaggery should be controlled and its manufacture banned in the area of operation of the white sugar factories.

(*b*) The Government should fix clearly defined cane zones of different factories so that sugar factories could concentrate their attention on the development of sugarcane in their respective zones.

(*c*) The Central Government should fix the minimum price of cane for a period of at least five years.

(*d*) The sugar year should be reckoned from 1st July to 30th June of the following year.

(*e*) The expansion of the existing units should be given preference over the establishment of new factories.

(*f*) A thousand ton unit is of good enough a capacity and, therefore, if a new unit of thousand tons capacity is justified near an existing factory and does not affect the supplies of the existing factories, preference should be given to the establishment of the new unit rather than the expansion of the old one.

(*g*) There should be a State level agency to look after the affairs of the sugar industry in the State.

(*h*) The policy of the Government of India should be such that the sugar industry gets its maximum concentration in Southern States so that land in the North is released for the production of other foodgrains.

(*i*) Actual users' licenses for importing spare parts of tractors should be sanctioned at least for a period of five years.

(*j*) The purchase tax in the Mysore State is 15 per cent on cane price and is higher than in other States. It should either be brought on par with other States or should be duly allowed for in the cost structure of sugar.

(*k*) Expenditure on procurement of cane and its transport is actually more in the State than that provided in the Tariff Commission schedule and should be revised.

(*l*) The control price of waste molasses should be higher than what it is at present.

(*m*) There should be liaison between the Sugarcane Research Station and the sugar factories.

The views of the Committee on the above points are as follows :

(*a*) *Ban on Jaggery Production and Control on its Price.*—This problem exists only in two factory areas of the State *viz.*, Ugar and Sankeshwar. The State Government may evolve a policy by which long term bonding of cane can be done for the factories and those cane growers, who bond their cane for supply to factories do not, in the years of high *gur* price, revoke their contracts. Suitable legislative measures should be taken so that the cane growers do not violate their agreements. The growers should be persuaded to feel that their long term interest lies in their identifying themselves with the white sugar factory, which is a permanent source of profitable disposal of their produce and they should not jeopardise their interest on account of occasional spurts of *gur* price.

(*b*) *Determination of Cane Zones.*—The Committee fully agrees with this suggestion and recommends it to the State Government for adoption.

(*c*) *Fixation of Cane Price for a Period of Five Years.*—The Committee agrees in principle that the minimum cane price should be announced well in advance for at least two following seasons.

(*d*) *Sugar Year.*—The Committee has no objection to the adoption of the year from July to June.

(*e*) *Expansion Versus New Capacities.*—The Committee favours the view that the existing units should be allowed to expand as much as their cane supply or cane potential would permit. In this connection it may be pointed that if India has to compete in the world sugar market, it must raise the capacity level of its production units to those of the competing sugar countries as one of the means of bringing down the cost of production.

(*f*) *Multiplication of Thousand Ton Units.*—The Committee does not agree with the view that thousand tonnes is good enough capacity. The policy should be to have the fewest number of sugar units of the largest possible capacities in the country rather than having a large number of units of small capacity, so long as cane potential within economic distance exists. In Mysore it should be possible to develop each factory to 2,000 tonnes and more in view of the higher yields per acre.

(*g*) *State Agency for Sugar Industry.*—The Committee was informed that State Sugarcane Committee has been formed with representatives of all the concerned departments at the State level. This is a step in the right direction because without proper co-ordination, cane development is not possible. It is further suggested that this State Sugarcane Committee should draw up the blue print for the development of sugar industry in the Mysore State in the next 10 years.

(*h*) *Concentration of Sugar Industry in the Southern States.*—In view of the study of the sugar industry in various States all over India which this Committee has been privileged to make, this aspect of the pattern of future development has been discussed under All India report.

(*i*) *Import License to be Valid for Five Years.*—This may be examined by the Government of India.

(*j*) ***Purchase Tax.***—This is a matter for the consideration of the State Government. In so far as the Committee is concerned, it agrees in principle that the purchase tax should be duly allowed for in the cost structure of sugar.

(*k*) *Cost of Transport.*—The Committee suggests that when the cost structure of sugar is next reviewed, all these actual conditions should be taken into consideration.

(*l*) *Control Price of Molasses.*—Raising the price of final molasses does not benefit the factory in any way, but of course, it is a step towards reducing the cost of production of sugar. However, this can be done only if the Government raises the price of industrial alcohol.

(*m*) *Sugarcane Research Station.*—The Committee agrees with the suggestion that there should be close liaison between the research station and the sugar factories and hopes that the Government will, if necessary, strengthen and expand the Research Station and see that its functions and activities are carried out in close collaboration with and according to the needs of the sugar factories of the State.

6. Finance required

The total cost of rehabilitation, modernisation and expansion of Mysore factories comes to Rs. 4·3 crores and that on improvement of communications to Rs. 8·38 crores.

सत्यमेव जयते

TABLE I-A

Area Under Cane

Sl. No.	Name of Factory	Capacity (tonnes/ day.)	Area under cane (000 acres)			
			1959-60	1960-61	1961-62	1962-63
1.	Munirabad	610	3·03	4·21	4·03	3·18
2.	Kampli	813	5·43	6·01	6·38	4·86
3.	Pandavapura . .	813	3·60	4·98	3·90	3·80
4.	Hospet	1,016	6·55	7·10	6·63	6·05
5.	Shimoga	1,016	3·00	3·00	3·00	3·00
6.	Sankeshwar . . .	1,270	..	12·00	16·44	12·07
7.	Ugar	813	15·13	17·30	17·84	17·84
8.	Mandya	1,422	12·14	10·73	9·35	7·79
	TOTAL .		48·88	65·33	67·57	58·59

Source—Factory Returns.

TABLE I-B

Estimated Yield of Cane per Acre

Sl. No.	Particulars	Yield per acre (tonnes)			
		1959-60	1960-61	1961-62	1962-63
1.	In whole State	28·09	29·37	29·86	32·78
2.	In Development Zone . . .	32·51	35·56	34·95	38·30

Source—Indian Central Sugarcane Committee.

TABLE I-C

Per cent Utilisation of Cane Crop for White Sugar

Sl. No.	Name of Factory	1959-60	1960-61	1961-62	1962-63
1.	Munirabad	87·00	88·70	88·00	88·80
2.	Kampli	78·00	78·00	79·00	78·00
3.	Pandavapura	40·00 (trial season)	80·00	100·00	90·00
4.	Hospet	84·00	86·00	84·00	85·00
5.	Shimoga	N.A.	N.A.	N.A.	70·00
6.	Sankeshwar	..	0·77 (trial season)	28·53	40·08
7.	Ugar	25·00	31·00	29·00	30·00
8.	Mandya	88·00	91·00	95·00	76·00

N.A.—Not Available.

Source—Factory Returns.

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Actual supplies made to the factories (000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1.	Munirabad	610	68·00	122·00	101·00	82·00
2.	Kampli	813	111·75	151·52	146·21	118·59
3.	Pandavapura . .	813	42·00	124·27	173·57	127·64
4.	Hospet	1,016	153·00	206·00	186·00	161·00
5.	Shimoga	1,016	18·71	42·52	67·00	55·00
6.	Sankeshwar	1,270	—	2·37	111·88	116·61
7.	Ugar	813	102·43	143·67	135·28	138·35
8.	Mandya	1,422	316·94	402·29	385·01	257·36
	TOTAL		812·83	1,194·64	1,305·95	1,056·55

Source—**Factory Returns.**

TABLE I-E

Percentage of Gate, Road and Rail Cane and Number of Growers

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Per cent gate cane	Per cent road cane	Per cent rail cane	No. of growers supplying cane to the factory (1962-63 season)
1.	Munirabad	610	100·0	Nil	Nil	805
2.	Kampli	813	100·0	Nil	Nil	1,610
3.	Pandavapura	813	100·0	Nil	Nil	3,400
4.	Hospet	1,016	100·0	Nil	Nil	2,500
5.	Shimoga	1,016	80·0	20·0	Nil	1,800
6.	Sankeshwar	1,270	100·0	Nil	Nil	3,412
7.	Ugar	813	100·0	Nil	Nil	3,792
8.	Mandya	1,422	62·0	25·0	13·0	8,251
					TOTAL	25,570

Source—**Factory Returns.**

TABLE II-A

Irrigation

Sl. No.	Name of Factory	Area irrigated per cent cultivable	Existing means of irrigation		Area expected to be irrigated by proposed works (acres)
			Canals	Wells, *Rahats* and pumping sets.	
1.	Munirabad .	55	Canals	Nil	500
2.	Kampli .	83	(*i*) Tungbhadra Canals. (*ii*) Premoghal Canals (*iii*) Tanks	Negligible	5,000
3.	Pandavapura	41	All by Canals	..	3,000
4.	Hospet . .	100	4 canals 1 Tank	130 (P.S.).	--
5.	Shimoga .	40	All by Canals	..	—
6.	Sankeshwar .	3 (Approx.)	Nil	9291 (W) 10258 (R) 1621 (P.S.)	2,000
7.	Ugar . .	6	for 4000 acres	for 11000 acres(W&R) for 7000 acres (P.S.)	5,000
8.	Mandya .	100	Vishweshwaraiah Canals and its distributaries.	—	--

W—Wells.
R—Rahats.
P.S.—Pumping Sets.
Source—Factory Returns.

सत्यमेव जयते

TABLE II-B

Manures and Fertilizers

Sl. No.	Name of Factory	Possible area under cane (acres)	Requirements of manures and fertilizers			
			Chemical fertilizers (tonnes)	Cakes (tonnes)	Green manure seed (tonnes)	Compost (tonnes)
1.	Munirabad	4,500	1,300	..	..	27,000
2.	Kampli	10,000	7,000	720	227	1,00,000
3.	Pandavapura . .	5,500	5,477	..	70	22,000
4.	Hospet	8,700 (1964-65)	N.A.	N.A.	N.A.	N.A.
5.	Shimoga	7,600	15,000	5,000	Nil	Nil
6.	Sankeshwar	16,000	6,000	6,000	100	90,000
7.	Ugar	18,000	18,000	Nil	120	9,000
8.	Mandya	12,000	12,200	..	..	..

***Source*—Factory Returns.**

TABLE II-C

Cane Seed

Sl. No.	Name of Factory	Possible area under cane (acres)	Amount of seed requirement (yearly tonnes)
1.	Munirabad	4,500	11,000
2.	Kampli	10,000	30,000
3.	Pandavapura	5,500	16,500
4.	Hospet	8,700 (1964-65)	18,000
5.	Shimoga	7,600	21,000
6.	Sankeshwar	16,000	7,500
7.	Ugar	18,000	36,000
8.	Mandya	12,000	25,400

Source—Factory Returns.

TABLE II-D

Means of Communications

Sl. No.	Name of Factory	Existing *pucca* roads in factory zones (kms.)	Requirements		
			Pucca roads in (kms.)	No. of bridges	No. of culverts
1.	Munirabad	77	42	7	..
2.	Kampli	144	170	..	..
3.	Pandavapura	96	224	..	..
4.	Hospet	32	25	..	..
5.	Shimoga	some temporary tracks only	320	4	..
6.	Sankeshwar	309	285	25	150
7.	Ugar	102	96	..	3
8.	Mandya	17,142	288	..	462
		TOTAL	1,450	36	615

सत्यमेव जयते

Source—Factory Returns.

TABLE III-A

Milling Plants

Sl. No.	Name of Factory	Capacity (tonnes/day)	Cane knives	Milling tandem	Mill drive	
			Total H.P. & No. of sets		Type	Total H.P.
1.	Munirabad	610	115(2)	11/27″×54″	E	290
2.	Kampli	813	300(2)	12/28″×56″	E	700
3.	Pandavapura	813	185(2)	12/28″×56″	E	860
4.	Hospet	1,016	204(1)	12/30″×60″	E	900
5.	Shimoga	1,016	150(1)	14/27″×54″	E	850
6.	Sankeshwar	1,270	250(2)	12/28″×56″	T	815
7.	Ugar	813	290(2)	12/26″×48″	E	500
8.	Mandya	1,422	I 160(2)	15/24″×48″	E	450
			II 300(2)	15/34″×78″	E	900

E—Steam Engine.
T—Steam Turbines.
Source—Factory Returns.

TABLE III-B

Power and Steam Generating Plants

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Power generating units Total K.W.	Boilers	H.S. per cent boiler H.S.	
				No./H.S./Pressure Sq. ft. (p.s.i.g)	Economizer	Super-heater
1.	Munirabad . .	610	87	2/10300/160	Nil	Nil
2.	Kampli . . .	813	950	3/18729/295	42	23
3.	Pandavapura . .	813	1,000	2/10000/290	Nil	23
4.	Hospet . . .	1,016	750	4/10740/160 5000/285	Nil	15
5.	Shimoga . . .	1,016	315	4/20785/150	37	Nil
6.	Sankeshwar . .	1,270	1,250	2/14000/320	50	21
7.	Ugar . . .	813	1,000	3/9500/165 5910/210	55	E
8.	Mandya . . .	1,422	2,900	9/54290/150	Nil	E

E—Exists, H.S. not mentioned.

Source—Factory Returns.

TABLE III-Ci

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Juice weighing	Juice heaters		
				Total H.S. sq. ft.	Vertical or horizontal	V.L. juice heater H.S. (sq. ft.)
1.	Munirabad	610	M	3,000	V	Nil
2.	Kampli	813	A	2,400	V	Nil
3.	Pandavapura . .	813	A	3,300	V	Nil
4.	Hospet	1,016	A	3,000	V	Nil
5.	Shimoga	1,016	Mea	2,700	N.A.	Nil
6.	Sankeshwar . . .	1,270	A	3,000	V	Nil
7.	Ugar	813	A	6,200	V	Nil
8.	Mandya	1,422	A	4,800	H	Nil

N.A.—Not Available;
M—Manual; A—Automatic;
Mea—Measurement; V—Vertical;
H—Horizontal.
Source—Factory Returns.

TABLE III-Cii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Sulphitation process batch/ cont.	Settling	Filtration	Preheater H.S. (sq. ft.)	Vapour cell H.S. (sq.ft.)	Evaporators	
								Type	Vapour bleeding
1.	Munirabad .	610	B	C	B	Nil	5,000	Q	Yes
2.	Kampli .	813	B	C	C	970	5,000	Q	Yes
3.	Pandavapura	813	C	C	C	Nil	Nil	Q	No
4.	Hospet .	1,016	B	C	B	Nil	Nil	Q	Yes
5.	Shimoga .	1,016	B	C	B	Nil	Nil	T	Yes
6.	Sankeshwar	1,270	C	C	C	Nil	Nil	Q	Yes
7.	Ugar .	813	C	C	C	Nil	Nil	Quin	Yes
8.	Mandya .	1,422	C	C	C	Nil	Nil	Q	Yes

B—Batch; C—Continuous;

T—Triple ; Q—Quad; Quin—Quintuple.

Source—Factory Returns.

TABLE III-Ciii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Pans		Low grade crystallizers	
			Total capacity (tons)	Per cent coil capacity	No.	% Water cooled capacity
1.	Munirabad	610	75	13	6	Nil
2.	Kampli	813	140	Nil	4	100
3.	Pandavapura . . .	813	120	Nil	4	100
4.	Hospet	1,016	123	Nil	5	25
5.	Shimoga	1,016	105	14	5	Nil
6.	Sankeshwar . . .	1,270	155	Nil	6	100
7.	Ugar . . . . :	813	163	Nil	7	N.A.
8.	Mandya	1,422	170	Nil	12	100

N.A.—Not Available.

Source—Factory Returns.

TABLE III-Civ

Boiling House Equipment

Sl. No.	Name of Factory	Centrifugals			
		Ordinary		High speed	
		No.	Size	No.	Size
1.	Munirabad	18	36″×18″	Nil	
2.	Kampli	3	45″×25″	5	45″×31″
3.	Pandavapura	Nil		4 4	49″×32″ 48″×24″
4.	Hospet	Nil		4 4	49″×32″ 42″×24″
5.	Shimoga	18	36″×18″	4	47″×28″
6.	Sankeshwar	Nil		10	40″×30″
7.	Ugar	Nil		2 3 6	49″×32″ 48″×24″ 40″×30″
8.	Mandya	Nil		9 7	49″×32″ 40″×25″

Source—Factory Returns.

TABLE IV-Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	13·10	11·92	11·98	13·07
2.	Kampli	13·46	12·99	13·16	13·25
3.	Pandavapura	13·55	13·60	13·45	13·95
4.	Hospet	13·41	12·21	13·05	12·84
5.	Shimoga	12·82	12·94	12·85	12·78
6.	Sankeshwar	..	..	14·88	14·77
7.	Ugar	14·48	14·44	14·74	14·84
8.	Mandya	12·91	12·72	12·71	13·32

Source—Factory Returns.

TABLE IV-Aii

Cane Quality (Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad . . .	12·57	12·82	12·26	11·97
2.	Kampli . . .	13·63	14·07	13·80	14·51
3.	Pandavapura . . .	13·43	13·88	15·17	16·80
4.	Hospet . . .	13·02	14·42	13·29	13·52
5.	Shimoga . . .	13·74	13·40	13·55	13·42
6.	Sankeshwar . . .	..	..	13·72	10·41
7.	Ugar . . .	11·37	11·62	11·44	10·58
8.	Mandya . . .	11·84	12·33	13·06	12·57

Source—Factory Returns.

सत्यमेव जयते

TABLE IV-Aiii

Cane Quality (Primary juice purity)

Sl. No.	Name of Factory	Primary juice purity			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	83·60	82·03	81·70	83·83
2.	Kampli	83·08	80·64	81·55	83·96
3.	Pandavapura	85·67	86·95	87·03	88·70
4.	Hospet	86·16	83·56	86·89	86·30
5.	Shimoga	85·43	84·81	83·60	85·13
6.	Sankeshwar	..	..	83·39	85·88
7.	Ugar	86·73	84·65	85·83	86·65
8.	Mandya	86·39	84·67	86·52	87·06

Source—Factory Returns.

TABLE IV-Bi

Time Account (Duration of season)

Sl. No.	Name of Factory	Duration of season (days)			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	130	241	190	137
2.	Kampli	163	217	203	159
3.	Pandavapura	119	260	292	195
4.	Hospet	178	234	204	175
5.	Shimoga	60	108	119	110
6.	Sankeshwar	—	Trial season	140	124
7.	Ugar	127	165	143	135
8.	Mandya	221	280	288	209

Source—**Factory Returns.**

TABLE IV-Bii

Time Account (time loss)

Sl. No.	Name of Factory	Time lost per cent available			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	26·32	20·38	16·58	14·04
2.	Kampli	20·95	22·82	17·51	18·76
3.	Pandavapura	68·05 (1st season)	40·30	27·78	25·14
4.	Hospet	16·57	18·43	13·33	16·58
5.	Shimoga	45·02	26·27	17·57	20·82
6.	Sankeshwar	—	—	24·24	20·70
7.	Ugar	22·62	24·17	21·35	22·90
8.	Mandya	8·50	9·30	11·40	13·50

Source—**Factory Returns.**

TABLE IV-Ci

Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	10·16	8·95	9·07	10·17
2.	Kampli	11·06	10·44	10·40	10·90
3.	Pandavapura	11·11	10·97	11·04	11·69
4.	Hospet	10·42	9·13	10·29	10·31
5.	Shimoga	9·82	10·55	10·05	10·02
6.	Sankeshwar	—	—	12·27	12·69
7.	Ugar	12·38	12·12	12·52	12·67
8.	Mandya	10·13	9·88	9·80	10·54

Source—**Factory Returns.**

TABLE IV-Cii

Technical Efficiency (Total losses)

Sl. No.	Name of Factory	Total losses per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	2·96	2.99	2·93	2·92
2.	Kampli	2·42	2·57	2·79	2·37
3.	Pandavapura	2·46	2·65	2·43	2·28
4.	Hospet	3·01	3·10	2·78	2·55
5.	Shimoga	3·02	2·41	2·82	2·78
6.	Sankeshwar	—	—	2·63	2·10
7.	Ugar	2·12	2·34	2·24	2·19
8.	Mandya	2·80	2·86	2·93	2·80

Source—Factory Returns.

TABLE IV-Ciii

Technical Efficiency (Reduced overall extraction)

Sl. No.	Name of Factory	Reduced overall extraction			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	80·16	79·48	79·95	79·78
2.	Kampli	85·36	85·53	83·90	85·30
3.	Pandavapura	83·90	82·67	85·24	85·07
4.	Hospet	78·99	79·55	79·91	82·09
5.	Shimoga	79·66	83·61	81·56	81·94
6.	Sankeshwar	—	—	85·96	85·52
7.	Ugar	85·16	84·73	84·99	84·41
8.	Mandya	78·57	79·39	78·34	79·14

Source—Factory Returns.

TABLE IV-Di

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad	29·22	30·41	29·02	28·09
2.	Kampli	26·08	27·91	25·95	30·25
3.	Pandavapura	N.A.	N.A.	N.A.	N.A.
4.	Hospet	29·21	31·36	28·98	28·98
5.	Shimoga	47·47	41·74	36·24	36·89
6.	Sankeshwar	—	—	34·90	24·64
7.	Ugar	29.12	29·08	25·67	23·81
8.	Mandya	33·87	34·74	37·15	36·85

Source—Factory Returns.

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Munirabad . . .	2·35	2·05	2·03	1·64
2.	Kampli	Nil	Nil	Nil	Nil
3.	Pandavapura . . .	N.A.	N.A.	Nil	Nil
4.	Hospet	0·40	0·47	0·70	0·40
5.	Shimoga	17·64	14·87	7·76	8·49
6.	Sankeshwar . . .	—	—	5·85	2·18
7.	Ugar	5·33	4·66	1·33	1·18
8.	Mandya	6·32	5·73	6·33	6·94

N.A.—Not Available

Source.—Factory Returns

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of Factory	Capacity (tonnes/day)	Specifications of existing milling tandem	Expansion license already granted (tonnes)	Expansion as asked for by the factories (tonnes)	Financial requirement as submitted by the factory (lac Rs.)
1	2	3	4	5	6	7
1.	Munirabad .	610	11/27″×54″	1,016	1,016	27·0
2.	Kampli . .	813	12/28″×56″	1,500	1,500	16·9
3.	Pandavapura .	813	12/28″×56″	1,500	1,500	61·0
4.	Hospet . .	1,016	12/30″×60″	1,270	1,500	N.A.
5.	Shimoga . .	1,016	14/27″×54″	—	1,500	45·8
6.	Sankeshwar .	1,270	12/28″×56″	1,750	1500/1800	36·2
7.	Ugar . .	813	12/26″×48″	1,219	2,000	60·0
8.	Mandya . .	1422	I 15/34″×78″ II 15/24″×48″	2,500	4,000	Not given

N.A.—Not Available

Source.—Factory Returns.

TABLE VI-A

Existing Strength of Labour and Labour Considered Surplus at Present and After Modernisation

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Total labour employed	Labour surplus now		Labour surplus after modernisation	
				Skilled and semi-skilled	Unskilled	Skilled and semi-skilled	Unskilled
1.	Munirabad .	610	704	N.A.	N.A.	N.A.	N.A.
2.	Kampli . .	813	944	N.A.	N.A.	N.A.	N.A.
3.	Pandavapura .	813	680	Total No. 60		Nil	Nil
4.	Hospet . .	1,016	798	Total No. 200		Nil	Nil
5.	Shimoga . .	1,016	500	Nil	Nil	Nil	Nil
6.	Sankeshwar .	1,270	495	Nil	Nil	Nil	Nil
7.	Ugar . .	813	N.A.	N.A.	N.A.	N.A.	N.A.
8.	Mandya . .	1,422	1,500 (for Factory only).	N.A.	N.A.	N.A.	N.A.
			5,621				

N.A.—Not Available.

Source.—Factory Returns.

सत्यमेव जयते

TABLE VI-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Man days/tonnes of sugar			
			1959-60	1960-61	1961-62	1962-63
1.	Munirabad .	610	12·90	15·46	14·60	11·58
2.	Kampli . .	813	12·25	12·92	12·61	11·53
3.	Pandavapura .	813	16·59 (First season)	12·97	10·36	8·88
4.	Hospet . .	1,016	8·76	9·92	8·49	8·44
5.	Shimoga . .	1,016	16·34	12·05	8·83	10·00
6.	Sankeshwar .	1,270	—	—	5·04	4·14
7.	Ugar . .	813	—	—	—	—
8.	Mandya . .	1,422	10·34	10·59	11·57	8·76

Source.—Factory Returns.

TABLE VII-A

Utilisation of By-Products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day).	Bagasse (average of 5 seasons)			
			Production (000 tonnes)	Used as fuel (000 tonnes)	Saved and sold (tonnes)	Value realised (Rs.)
1.	Munirabad .	610	24·58	24·58	Nil	Nil
2.	Kampli .	813	35·59	34·68	905	N.A.
3.	Pandavapura .	813	36·77	N.A.	N.A.	N.A.
4.	Hospet . .	1,016	52·65	52·65	Nil	Nil
5.	Shimoga . .	1,016	12·59	12·59	Nil	Nil
6.	Sankeshwar .	1,270	29·28	29·28	Nil	Nil
7.	Ugar .	813	30·30	30·30	Nil	Nil
8.	Mandya . .	1,422	98·67	96·60	2,070 (by substitution)	N.A.
		TOTAL	320·43			

N.A.—Not Available.

Source.—Factory Returns.

TABLE VII—B

Utilisation of By-Products (Molasses)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Molasses (average of 5 seasons)			
			Production (000 tonnes)	Quantity utilised for distillery and trade (000 tonnes)	Surplus left (tonnes)	Value realised (000 Rs.)
1.	Munirabad .	610	4·13	4·13	Nil	46·05
2.	Kampli . .	813	5·23	3·61	1,620	56·03
3.	Pandavapura .	813	4·38	N.A.	N.A.	N.A.
4.	Hospet . .	1,016	6·75	N.A.	N.A.	57·91
5.	Shimoga . .	1,016	1·81	Some quantity exported	Some quantity destroyed	39·27
6.	Sankeshwar .	1,270	4·91	4·91	Nil	N.A.
7.	Ugar . .	813	4·47	Utilising in own distillery from 1962	Destroyed up to 1961-62	N.A.
8.	Mandya . .	1,422	13·55	13·55	Nil	N.A.
		TOTAL.	45·23			

N.A.—Not Available.

Source.—Factory Returns.

TABLE VII-C

Utilisation of By-Products (Press-mud)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Press mud (average of 5 seasons)			
			Production (000 tonnes)	Sold or utilised as manure (000 tonnes)	Surplus left (tonnes)	Value realised Rs.
1.	Munirabad .	610	1·43	1·43	Nil	647
2.	Kampli . .	813	2·61	2·61	Nil	5,114
3.	Pandavapura .	813	3·45	N.A.	N.A.	N.A.
4.	Hospet . .	1,016	5·08	5·08	Nil	4,013
5.	Shimoga . .	1,016	0·74	0·74	Nil	Nil
6.	Sankeshwar .	1,270	2·71	2·71	Nil	2,151
7.	Ugar . .	813	3·81	3·81	Nil	Nil
8.	Mandya . .	1,422	8·00	8.00	Nil	7,066
		TOTAL	27·83			

N.A.—Not Available.

Source.—Factory Returns.

सत्यमेव जयते

TABLE VIII-A

Profit After Tax or Loss of the Factories During the Ten Years Ending 1961-62

(In lacs of rupees)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.	Munirabad	—5·04	—3·41	—3·39	—1·98	—0·68	—0·48	0·56	0·84	2·21	0·06	—11·31	—1·13
2.	Kampli							N.A.	N.A.	N.A.	0·09	0·09	0·09
3.	Pandavapura								N.A.	N.A.	N.A.	N.A.	N.A.
4.	Hospet	1·94	3·06	5·37	5·95	—4·68	5·00	8·40	10·57	6·19	2·41	44·21	4·42
5.	Shimoga						—9·84	—1·77	—1·70	—6·59	2·61	—17·29	—3·46
6.	Sankeshwar										3·63	3·63	3·63
7.	Ugar	1·69	2·64	2·08	—3·63	1·57	7·12	11·65	13·81	11·94	9·14	58.01	5·80
8.	Mandya	17·70	—18·48	10·00	15·93	5·96	23·40	9·68	11·41	12·57	7·30	95·47	9·55
	AVERAGE	4·07	—4·05	3·52	4·07	0·54	5·04	5·70	6·99	5·26	3·61	3·68	3·68

N.A.=Not Available.

NOTE.—Determination of income tax on profits is a very elaborate process and it has not been possible for the Committee to assess the exact position. Fifty per cent of the gross profit has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII-B

Profitability of the Factories in Different Capacity Slabs

(Amount in lacs of Rs.)

Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
	No. of years for which data available	Total profit or loss for the above period	Average profit per year	No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Total profit or loss per year	Average profit or loss per year
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(*a*) *Factories with capacities between 500 and 749 tonnes*									
1. Munirabad . .	5	—14·50	—2·90	5	3·19	0·64	10	—11·31	—1·13
(*b*) *Factories with capacities between 750 and 999 tonnes—*									
1. Kampli . .	..	..	..	1	0·09	0·09	1	0·09	0·09
2. Ugar . . .	5	4·35	0·87	5	53·66	10·73	10	58·01	5·80
Number of Factories showing profit . .	1			2			2		
Average profit per year per factory (Rs. lacs) . .			0·87			8.96			5·28
(*c*) *Factories with capacities of 1000 tonnes and above—*									
1. Hospet . .	5	11·64	2·33	5	32·57	6.51	10	44.21	4.42

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
2. Shimoga . .	..	..	..	5	—17·29	—3·46	5	—17·29	—3·46
3. Shankeshwar .	..	..	..	1	3·63	3·63	1	3·63	3·63
4. Mandya . .	5	31·11	6·22	5	64·36	12·87	10	95·47	9·55
Number of factories showing profit . .	2			3			3		
Number of factories showing loss . .	..			1			1		
Average profit per year per factory (Rs. lacs) . .			4·27			6·28	..	..	7·88

TABLE VIII-C

Dividends Paid on Ordinary Shares by the Factories Since 1952-53

(Per cent paid up capital)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
1.	Munirabad	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
2.	Kampli	..	..	..	..	..	..	N.A.	N.A.	N.A.	Nil
3.	Pandavapura	..	..	..	..	..	..	..	N.A.	N.A.	N.A.
4.	Hospet	25·00	17·50	14·00	11·25	10·00	10·00	12·50*	14·00*	10·00*	8·00*
5.	Shimoga	..	..	..	..	..	Nil	Nil	Nil	Nil	Nil
6.	Sankeshwar	..	..	..	..	..	..	..	..	—	Nil
7.	Ugar	N.A.	6·00	6·00	6·00	6·00	8·00	15·00*	15·00*	15·00*	12·00
8.	Mandya	N.A.	20·00	20·00	20·00	20·00	30·00	30·00*	30·00*	30·00*	30·00

N.A.—Not Available.

*Subject to income tax.

ANDHRA PRADESH

1. GENERAL ASPECTS

1.1 The Andhra Pradesh consists of two regions *viz.*, Andhra region and Telengana region comprising of 11 and 9 districts respectively and is situated between latitude 12·6° to 19·8° (N) and longitude 76·8° to 84·8° (E).

Andhra ranks fifth among the sugarcane growing States in the country having about 2·3 lac acres under sugarcane which is about 4 per cent of the tolal cane area in the Indian Union.

Sugarcane in Andhra Pradesh is chiefly grown in the districts of Srikakulam, Visakhapatnam, East Godavari, West Godavari, Krishna, Chittoor and Nizamabad where the sugar mills are located. Ninety per cent of the State's total cane area is in these districts.

The climatic condition in the State being midway between sub-tropical north and hot-humid south, is very suitable for the sugarcane crop. Temperatures remain about 27°-32°C in summer and 21°-27°C in winter.

Soils on the eastern side are alluvial, in the middle red, yellow or dark reddish brown and in the east, they are black clayey or loamy type the soils of the coastal districts which are of the rich alluvial type are particularly suited to sugarcane.

The rainfall in southern half of the State varies from 51-102 cms. and in the northern part 102-127 cms.

1.2 Density of population and per capita income

The average density of population in Andhra Pradesh is 131 per sq. km.

Per capita income for the year 1960-61 has been estimated at Rs.287·01 at current prices.

सत्यमेव जयते

1.3 Importance of the sugar industry in the State

According to the survey by National Council of Applied Economic Research the net profit per acre of sugarcane cultivation in Andhra Pradesh is of the order of Rs. 890 which is the highest of all the crops grown in the State. The importance of sugarcane in the economy of Andhra Pradesh is thus established.

The sugar industry sustains about 45,000 cultivators and nearly 10,000 factory workers besides a large number of persons carrying on small trades in the vicinity of the factories. Assuming an average family of five persons the industry supports about 3 lac people. It pays about Rs. 10 crores annually to the cane growers of the State as cane price and the Central and State Governments derive an income of about Rs. 5·4 crores as excise duty and Rs. 95 lac as cess respectively. Thus the sugar industry occupies an important position in the economy of the State.

1.4 Establishment and growth of the Sugar Industry

The number of sugar factories working in the various years since 1953-54 has been as follows:—

Year	No. of working factories
1953-54 to 1955-56	10
1956-57	11
1957-58 to 1960-61	12
1961-62	15
1962-63	18

It will be seen from the above that the number of factories increased from 10 in 1955-56 to 18 in 1962-63, that is within a period of seven years eight new factories have come up. Two more factories *viz.* Vijayarama Gajapathy Agricultural and Industrial Co-operative Society Ltd., Bheemasingi Distt. Visakhapatnam and the Nizamabad Co-operative Sugar Factory, Nizamabad have been licensed against the Third Plan target and are reported to be coming up.

1.5 Distribution of sugar factories in Andhra Pradesh

The distribution of the 18 factories working at present in the various districts of Andhra Pradesh and their existing daily cane crushing capacity is as follows:—

District-wise Distribution of Sugar Factories in Andhra Pradesh

Name of the District	Name of Factory	Existing daily cane crushing capacity in tonnes (1963-64)
1. Srikakulam	1. Amadalavalasa	1219
	2. Bobbili	457
	3. Seethanagaram	305
2. Visakhapatnam	1. Anakapalle	305
	2. Etikoppaka	1016
	3. Chodavaram	1016
	4. Tuni	508
3. East Godavari	1. Pithapuram	1016
	2. Samalkot	813
	3. Chelluru	1016
4. West Godavari	1. Tanuku	1270
	2. Chagallu	1016
	3. Palakol	1016
5. Krishna	1. Vuyyuru	2540
	2. Challapa	813
6. Chittoor	1. Chittoor	1016
7. Nizamabad	1. Shakarnagar I 2. Shakarnagar II	4570

1.6 Cane development

(i) *Organisational set-up.*—There exists a Cane Development Section attached to the State Department of Agriculture, and works under the Cane Development Coordination Officer. The Development Scheme consists of

(a) running of sugarcane liaison farms on zonal centres in sugar factory areas of the State,

(b) special development for the intensive cane growing talukas of the State for popularising the improved methods of cane cultivation.

During the Third Five Year Plan there were six sugarcane liaison farm situated in the factory zones of Amadalavalasa, Etikoppaka, Samalkot, Tanuku, Vuyyuru and Chittoor. There are 29 development centres in charge of one Special Agricultural Assistant assisted by one Fieldman and 4 Demonstration Maistries. A chart indicating the organisational set-up of the cane development section is given below:—

Director of Agriculture
|
Cane Development Co-ordination Officer
|
Seven Superintendents (Sugarcane Liaison Farms)

Amadalavalasa, Etikoppaka, Elam, Samalkot, Tanuku, Vuyyuru and Chittoor
|
Six Fieldmen to assist each Special Agricultural Assistant
|
24 Demonstration Maistries

(Four Maistries under each Fieldman)

There is one sugarcane Superintendent at Nizamabad without liaison farm for supervising the sugarcane development work in Telengana area.

Development Work Done and Envisaged

(i) *Amount spent.*—The total amount of expenditure under the Sugarcane Development Scheme since 1956-57 is given below :—

Year	Amount Rs.	Subsidy given for seed supply Rs.
1956-57	87,741	—
1957-58	1,84,503	—
1958-59	2,39,691	—
1959-60	3,03,399	—
1960-61	3,45,737	—
1961-62	6,84,286	—
1962-63	7,60,734	6,943
1963-64	4,00,921	28,624

(ii) *Credit facilities to growers.*—The cane growers get credit facilities through (a) Panchayat Samitis, (b) Cooperative Societies and (c) Sugar factory managements.

(iii) *Plant protection.*—The sugarcane development staff carries out propaganda on methods of controlling the pests of sugarcane. Shoot borers, white ants, white fly and grass hopper are reported to be the pests infecting the cane crops in different zones. Amongst the diseases, smut is more prevalent for which steps are being taken to root out affected clumps and to encourage use of disease free seed. Ratooning is discouraged and use of organo-mercurial fungicides like Agallol and Aretan is made. Insecticides are being given from the funds of Development Councils.

(iv) *Irrigation.*—Statement below gives the irrigation facilities provided under the sugarcane development scheme, in different years :—

Year	Number of new wells dug	Number of pumping plants installed	Number of filter pumps installed
1953-54	20	99	286
1954-55	181	43	96
1955-56	20	116	—
1956-57	15	94	68
1957-58	517	245	187
1958-59	429	375	41
1959-60	209	638	42
1960-61	264	639	54
1961-62	722	858	292
1962-63	719	947	425
1963-64	631	539	400
TOTAL . .	3,727	4,583	1,891

The above facilities have assured continuous irrigation to an area of about 20,000 acres. Even so existing facilities of irrigation are considered to be inadequate in several regions and the Development Department has drawn out schemes and the requirements for development of irrigation in the Fourth Plan period.

(v) *Pilot project scheme.*—Pilot project scheme on the model of package programme for intensive development of sugarcane has also been sanctioned by the Government of Andhra Pradesh for the sugar factory zones of Amadalavalasa, Etikoppaka and Chittoor. The scheme has the following salient features :—

(1) To cover an area of 2,000 acres.

(2) To distribute 6,000 tonnes of improved seed material on subsidised rate for increasing the yield.

(3) To subsidise on plant protection for controlling pests and diseases on an area of 2,000 acres for minimising losses in yield.

(4) To demonstrate the use of improved methods of sugarcane cultivation through laying out of demonstration plots besides publicising them through posters and leaflets.

It is now proposed to extend the working of this Project Scheme to the other sugar factory areas of the State.

The following are the broad outlines for the material aid proposed to be given in each unit of the factory zone.

(*a*) Granting a subsidy of Rs. 10 per tonne of seed material of improved varieties for 2,000 acres in each unit of the factory zone.

(*b*) Granting a subsidy of Rs. 10 per acre for plant protection purposes for 2,000 acres.

(*c*) Laying down of 40 demonstration plots and a subsidy of Rs. 50 per plot.

Various Development Schemes and Campaigns with their Total Cost and Duration

	Duration	Cost in lac Rs.
(*i*) Sugarcane development scheme	1961-66	30·27
(*ii*) Scheme for construction of roads around sugar factory area	1961-66	2·90
(*iii*) Pilot project scheme for sugarcane development :—		
(*a*) Etikoppaka factory area	1964-66	8·22
(*b*) Chittoor factory area		2·22
(*c*) Amadalavalasa factory area		2·22
TOTAL .		45·83

(vi) *Varietal pattern.*—The most important varieties of sugarcane raised in Andhra and recommended by the Indian Council of Agricultural Research are the following:—

(*a*) Andhra region—Co 419, Co 449, Co 527.

(*b*) Telengana—Co 290, Co 419, Co 467, Co 517 and POJ 2878.

The varietal position of sugarcane cultivation in the State is under the constant vigilance of the Sugarcane Specialist as well as of the Advisory Committee of the State. In recent years the varietal position in factory areas is being watched by the Development Councils and the Cane Development Coordination Officer, who is in close touch with the varietal schedule in all the districts of the State.

The varietal schedule recommended till 1960-61 was Co 527 for early crushing, Co 449 for mid season and Co 419 for late crushing in the season. The schedule has however been modified in the recent years with the release of Co 997 for early crushing and Co 975 for mid season. Intensive research work was conducted in all the Liaison Farms of the State to find the suitability of these varieties for the respective zones after their general release from Sugarcane Research Station, Anakapalle. It has been possible to increase the area under Co 997 to a considerable extent in some of the areas. This is expected to have an impact on the recoveries of the particular sugar factories. Co 419 however is still the predominant variety.

1.7 Cane marketing

In Andhra Pradesh there are no cane growers co-operative societies to supply cane to the sugar factories. The cane supply to the factories is regulated under the provisions of the Andhra Pradesh Sugarcane (Regulation and Purchase) Act, 1961. According to the Act the growers offer their cane before a particular date fixed by the Cane Commissioner and the factory management enter into agreements with the growers for the supply of cane. Sugar factories issue cutting orders according to their requirements and as far as possible on the maturity basis. Separate purchasing centres are also maintained in some of the factory zones like Amadalavalasa, Chodavaram, Anakapalle, Etikoppaka and Bobbili where the *ryots* deliver their cane.

1.8 Sugarcane research

The Sugarcane Research Station, Anakapalle is the central station for research on sugarcane in Andhra Pradesh. It caters to the needs of all the coastal districts wherein the bulk of the cane area is situated. The station at Rudrur serves the needs of Telengana region. Another research station at Perumallapalle has also been recently started for the Rayalaseema region. The research stations are manned by Sugarcane Specialists and other officers to carry on work on different aspects of sugarcane *viz.*, agronomy, physiology, chemistry, entomology, plant pathology etc.

The Sugarcane Research Station at Anakapalle carries out a co-ordinated breeding programme with Coimbatore Institute and has released several good varieties, *e.g.* Co 997, Co 975 and Co 449. Besides evolving appropriate manurial schedules, useful work has been done on fertiliser placements, periods for nutrient requirements *etc.* Studies are also reported to have been carried out on the irrigational requirements of cane and on weedicides, insecticides, fungicides, etc. These are reported to have proved useful. The research station at Rudrur which is also functioning since 1937 has also been reported to be doing good work on all aspects of sugarcane cultivation in Telengana tract and has released several varieties of cane both *Eksali* and Adsali. Co 419 is now the major variety in Telengana along with Co 467 and Co 775 as the recent releases. Work of testing and release of newer and better varieties is reported to be progressing satisfactorily.

1.9 Expenditure on cane development

Year	Amount of cess/purchase tax collected	Amount actually spent on cane development schemes	Amount spent on construction of roads in sugar factory areas
1958-59	61,06,224	607,456	14,70,425
1959-60	58,26,608	728,053	23,12,142
1960-61	64,95,514	741,304	27,41,304
1961-62	23,59,132	726,366	15,34,036
1962-63	130,18,176	727,110	32,00,000

Note.—Since no co-operative society commission is collected, Government of Andhra Pradesh have been making *ex-gratia* payments to Cane Development Councils. During the year 1963-64 the Government granted Rs. 2,000 for each of the 17 Cane Development Councils in the State.

2. TECHNICAL ASPECTS

2.1 Area under sugarcane and yield per acre

Each sugar factory in Andhra Pradesh has been assigned to it a specified area (zone) from which it can draw its cane supplies called the reserved area. Certain areas are reserved on temporary basis also. In addition to these, there are certain areas termed as "free areas" which are not reserved for the factories but the factories are allowed to draw cane from them.

The position with regard the area under cane is given in Table I-A and estimated yield per acre in Table I-B.

It will be seen from the data given in these tables that:—

(*i*) the area under cane in factory zones has increased considerably with the coming up of ne factories. From 62·73 thousand acres for 9 factories in 1959-60, it has gone up to 123·23 thousand acres in 1962-63 for 15 factories.

(*ii*) several factories *viz*., Seethanagaram, Bobbili, Samalkot, Tuni, Challapalli, Chelluru, Pithapuram, Etikoppaka, Tanuku and Vuyyuru have registered a fall in the area under cane during the 1962-63 season as compared to 1961-62 season.

(*iii*) the yield for whole State is 29-32 tonnes and for development zones 32-36 tonnes per acre.

2.2 Cane Supplies to Sugar Mills

The percentage of cane utilised for white sugar manufacture is shown in Table I-C, the actual supplies made to sugar factories in Table I-D and the percentage supply of gate, road and rail cane in Table I-E.

It will be seen from Table I-C that the supplies of cane to sugar mills have varied from 25 to 100 per cent of the cane produced. Minimum utilisation of cane for white, sugar has been in Tuni (25 per cent) and Tanuku (31 per cent) and maximum in Vuyyuru (100 per cent), Samalkot (86·4 per cent) and Challapalli (75-95 per cent) Except in isolated cases, where cane supplie. suffered due to diversion for *gur* manufacture, in general no factory complained of any serious shortage of cane for their capacity. In general in lean years too Andhra factories were reported to have achieved their targetted crush and production. In the year 1962-63, which was the year of high *gur* price, supplies of cane to the factories did not materially fall on account of diversion to *gur* and only a few factories, *viz*., Seethanagaram, Challapalli, Chelluru and Pithapuram recorded increased utilisation for *gur* and *khandsari*. Table I-D will show that the total supplies to factories were 1223·78 thousand tonnes in the year 1961-62 In 1960-61 also the supplies were almost equal (1211·5 thousand tonnes) whereas they fell to 1029·31 thousand tonnes in the year 1962-63 perhaps due to some diversion to *gur* and fall in yield in some factory zones.

It will be seen from Table I-E that in case of most of the factories (12 out of 15) cent per cent cane supply is received at the factory gate which is a very happy position and ensures fresh cane supplies to the mills at the least ton-mile expense. Only Etikoppaka and Amadalavalasa have 20 to 33 percent road cane respectively. Shakarnagar is having both road and rail cane with higher transport cost.

2.3 Irrigation, application of manuers and fertilizers and supply of cane seed

The existing position in the various factories of Andhra Pradesh in respect of irrigation and supply of cane seed is given in Table II-Ai and II-B respectively.

It will be seen from Table II-Ai that considerable area under cane in most of the factory zones is irrigated and the overall position of irrigation is fairly satisfactory.

In Godavari and Krishna Deltas where 9 sugar factories are situated there is reported to be ample cane to meet their requirements. After the completion of the contemplated hydro-projects on these rivers, sugarcane cultivation there will further increase. The uplands of these Deltas are not commanded by canals but the rural electrification has brought in tubewells and lift irrigation schemes and as such extensive sugarcane cultivation has been taken up. These areas have very good drainage facilities.

Godavari is a perennial river and therefore, supplies in its canal system are available throughout the year. Recently a pumping scheme near Torrigadda has been commissioned which commands about 15,000 acres and there is no difficulty in supplying water round the year for sugarcane cultivation. Another pumping scheme for about 4,000 acres of area at Gotala on the right bank of Godavari has been sanctioned and the work is in progress. Two more pumping schemes (each for 4,000 acres) have been contemplated between Polavaram and Vijjeswaram which will meet the requirements of the Chagallu sugar factory.

Under the Kurnool Cuddappa canal there is a block of about 4,000 acres under cane where water is available all the year round.

The Yelluru river system in East Godavari district has about one lac acres of intensive cultivation. To make it dependable, it is proposed to construct a reservoir on the river. This system at present caters to the needs of Pithapuram and Samalkot areas. The State Government has recently passed the Advance Betterment Act under which the growers give advance contribution of about Rs. 100/- per acre in order to expedite the start of the execution of the project. The growers in the above area (Yelluru river basin) have already come forward with this contribution.

In the Visakhapatnam district, the Sharda river system has a very extensive sugarcane cultivation in Chodavaram and Anakapalle Talukas. In this area there are four factories, *viz.*, Anakapalle, Etikoppaka, Chodavaram and Tuni. In order to make the Sharda system also more dependable the construction of a reservoir is proposed.

In Srikakulam district an area of 15,000 acres under sugarcane is irrigated by the Nagavali and Vamsadhara river systems. Three factories, *viz.*, Amadalavalasa, Bobbili and Seethanagaram are situated in this area.

For the non-deltaic areas like Chittoor and Renigunta the State Government is encouraging wells by subsidizing and giving loans. Rural electrification has also been done.

It appears from the above that the irrigation needs of the sugar factory areas are being largely met and wherever necessary further schemes are contemplated. In several factory areas, the needs of the minor irrigation projects have been surveyed by the State authorities and necessary proposals have been drawn up for the Fourth Plan. These requirements are given in Table II-Aii.

It is estimated that a sum of Rs. 853 ·1 lacs will be needed for the purpose out of which Rs. 138 ·05 lacs are proposed to be given as subsidy for digging of about 12,280 wells while the remaining amount can be recovered as loans. This provision is estimated to assure irrigation to about 98,000 acres out of which 65,740 acres will be under sugarcane.

Some of the factory areas are affected by water logging conditions.

Table II-B shows the requirement of seed. It will be seen that for 12 factories actual yearly requirement of seed is about 1 ·92 lac tonnes. Under the pilot project scheme for intensive development of sugarcane now operating in the zones of Amadalavalasa, Etikoppaka and Chittoor, the Development Department has undertaken to distribute 6,000 tonnes of improved seed material on subsidised rate and since these schemes are proposed to be extended to other sugar factory areas also the problem of seed will automatically be solved.

The fertilizers in Andhra Pradesh are allotted to the sugar factories for making them available to the cane growers as per the consignment-*cum*-credit system. According to this system the sugar factories receive the stock of different fertilizers and supply them to the cane cultivators. The cost of the fertilizers is realised at the time of payment of cane price and credited to the Government. The quantity of fertilizers distributed for the sugarcane crop in 1963-64 for the different development zones is given in the Table below:—

(In tonnes)

Name of the zones	Ammonium Sulphate	Urea	Other nitrogenous manures	Oil cake	Green manures	Mixtures	Super phosphate
1. Bobbili . .	564·10	818·6	390·08	32·00	84·43	—	—
2. Elamanchidi .	5800·00	2085·5	1733·00	2194·00	3·10	688·0	—
3. Samalkot .	1622·50	151·5	2436·00	10·00	1·22	—	—
4. Tanuku .	4350·00	1600·0	370·00	102·59	1·48	—	—
5. Vuyyuru .	549·49	2212·6	1323·00	888·31	17·15	—	—
6. Chittoor .	843·45	769·5	315·20	890·60	4·51	—	—
7. Nizamabad .	21247·00	6905·9	11440·22	2798·00	70·53	—	409·54
TOTAL .	34976·54	14543·7	18007·50	6915·50	182·42	688·0	409·54

Chemical fertilizers	67937·30
Organic manures	7785·92

It will be noted that the Development Department in Andhra Pradesh is giving considerable facilities in respect of fertilizer requirements of the cane crop.

2.4 Means of communications.

Table II-C shows the position with regard to means of communication at present available in respect of *pucca* roads. Further requirements in respect of *pucca* roads, bridges and culverts are also shown.

It will be seen from Table II-C that at present about 1,717 Kms. of roads exist in the areas of 10 factories. A considerable part of these roads are the main roads of the highways. The additional requirements of these factory zones are 1,042 Kms. which will cost about Rs. 5·73 crores @ Rs. 55,000/- der Kilometre.

As regards bridges about 10 bridges and 792 culverts are required. The expenditure on these items is estimated to be Rs. 5 lacs and Rs. 23·76 lacs respectively.

2.5 Duration of season, cane crushed, sugar made and average recovery

The position with respect to average duration of season, cane crushed, sugar produced and average recovery recorded during the preceding 7 years is as follows :—

Year	Average duration (22 hrs.)	Cane crushed (lac tonnes)	Sugar made (lac tonnes)	Average recovery per cent cane
1956-57	146	15·67	1·44	9·20
1957-58	139	15·94	1·55	9·71
1958-59	107	12·99	1·22	9·42
1959-60	111	14·16	1·39	9·85
1960-61	147	19·33	1·83	9·46
1961-62	125	18·95	1·88	9·90
1962-63	93	16·66	1·72	10·32

It will be seen that during the last 7 years the average duration (22 hours) has varied from 93 days in 1962-63 to 147 days in 1960-61. The maximum production of sugar was 1·88 lac tonnes in 1961-62 and the maximum recovery was 10·32 in 1962-63.

2.6 Sugar production

The position with regard to the number of working factories, registered capacity, production of sugar in tonnes and sugar produced per 100 tonnes of registered capacity is shown below :—

Year	No. of working factories	Total registered cane crushing capacity per day in tonnes	Production of sugar in tonnes	Production of sugar/ 100 tonnes registered capacity (tonnes)
1950-51	9	7,341	60,665	826·4
1951-52	11	8,560	84,662	989·0
1952-53	11	8,560	84,816	990·8
1953-54	10	8,484	72,916	859·4
1954-55	10	8,484	1,11,703	1316·6
1955-56	10	8,484	1,40,135	1651·7
1956-57	11	9,601	1,44,145	1501·3
1957-58	12	11,227	1,54,731	1378·2
1958-59	12	11,633	1,20,931	1039·5
1959-60	12	11,836	1,39,129	1175·5
1960-61	12	11,836	1,82,738	1543·9
1961-62	15	14,376	1,87,660	1305·4
1962-63	18	19,406	1,68,513	868·3

The maximum production of sugar has been 1·88 lac tonnes in the year 1961-62. The maximum production per 100 tonnes of registered capacity has been 1,651·7 tonnes in the year 1955-56. The consumption of sugar in Andhra Pradesh in 1961-62 was about 1·09 lac tonnes. The State is thus surplus by about 79,000 tonnes.

2.7 The present age and condition of plants and their original and present capacities

The following table gives the age of the various plants and their capacities :—

Name of Factory	Year of establishment	Age in 1963 in years	Original capacity tonnes/day	Existing daily cane crushing capacity (licensed) tonnes 1963-64 season	Actual maximum crushing rate per 24 hours operation attained in 1961-62 or 1962-63 tonnes
1. Anakapalle . .	N.A.	N.A.	N.A.	305	—
2. Seethanagaram .	1940	23	305	305	—
3. Bobbili . .	1934	29	152	457	760
4. Tuni . . .	1962	N.A.*	508	508	265
5. Chagallu . .	1961	2	813	813	785
6. Challapalli . .	1957	6	813	813	983
7. Samalkot . .	1931	32	813	813	892
8. Chelluru . .	1949	4	1,016	1,016	—
9. Chittoor . .	1962	1	813	1,016	744
10. Chodavaram . .	1962	1	813	1,016	—
11. Palakol . .	1955	8	813	1,016	—
12. Etikoppaka . .	1933	30	51	1,016	967
13. Pithapuram . .	1951	12	610	1,016	932
14. Amadalavalasa .	1960	3	1,016	1,219	898
15. Tanuku . .	1951	12	610	1,270	1,265
16. Shakarnagar I .	1939	24	1220	4,572	—
17. Shakarnagar II .	1951	12	305		
18. Vuyyuru . .	1939	24	864	2,540	2,496

*Old plant shifted from Deoria (East U.P.); working at the present site started from 1962-63 season.

It will be seen from the above that except Seethanagaram, Bobbili, Tuni, Samalkot, Etikoppaka, Pithapuram, Tanuku, Shakarnagar and Vuyyuru the other factories are less than 10 years old. The oldest factory is Samalkot (32 years) followed by Etikoppaka (30 years). There had not been much additions to the originally installed capacities as about half of the

सत्यमेव जयते

factories came into existence after 1956-57. These new factories are generally of 1,016 tonnes capacity per day. The old factories of Seethanagaram and Bobbili did not carry out expansions but Pithapuram has gone up from 610 to 1,016, Tanuku from 610 to 1,270, Shakarnagar from 1,525 to 4,572 and Vuyyuru from 864 to 2,540 tonnes.

At present the distribution in various capacity ranges is as follows :—

Below 500 tonnes	3
500—850 tonnes	4
850—1050 tonnes	6
1050—1250 tonnes	1
Above 1250 tonnes	4

Out of the 15 factories who submitted information eight started crushing in 1956-57 or later and as such have some modern features and their layout etc. is quite satisfactory. Tuni factory, though established in 1962 has small capacity of 508 tonnes only and has the old plant shifted from Deoria.

It will be seen from Table III-A that the milling plants of all the factories have got two sets of knives (reporting factories 15) which are generally adequately powered, four factories have turbines for mill drives, 4 have engines and turbines both, and others have engines. The power in the steam turbines/engines is adequate in all the factories except Pithapuram and Etikoppaka, Anakapalle has two small mill tandems for its small crushing capacity of 305 tonnes; such small sized tandems are rather out of date as they can hardly take the optimum hydraulic loads for satisfactory extraction. All the plants except Samalkot have 12 or more number of rollers in their milling tandems.

Table III-B will show that all the factories except Seethanagaram and Bobbili are semi-electrified. Etikoppaka factory is purchasing power from the Andhra Pradesh Government. Nine factories have got boilers of 200 or above p.s.i.g. working pressure. Vuyyuru factory has got both high as well as low pressure boilers, all other factories have also got 160 p.s.i.g. working pressure boilers. Only 3 factories have economisers and only 4 have got superheaters.

As regards the equipment in the boiling house, Tables III-Ci, ii, iii and iv will show that 14 factories have automatic juice weighing scales and 3 have the manual type. Eight factories have got vertical juice heaters, four have vertical as well as horizontal and 5 factories have got horizontal type juice heaters. In 13 factories bled vapours are used for heating of juices, no factory has got vapour line juice heater, seven of the factories have got batch type sulphitation tanks, filtration also is batch type in four factories whereas others have continuous rotary filters. All factories except Anakapalle and Seethanagaram have quadruple (13) or quintuple (1) effect evaporators. Three factories have got vapour-cells, ten factories still have coil pans to the extent of 12 to 37 per cent of their total pan capacity. Only 5 factories have water cooled crystallizers on the low grade side. Five factories have got entire capacity in high speed centrifugals and five factories have both ordinary as well as high speed machines.

It will be seen from the above that almost all factories need modernisation in some respects while some are very old and need a considerable degree of modernisation.

2.8 Working results

The data with respect to (i) cane quality, (ii) time account, (iii) recovery and total losses, and (iv) fuel consumption are given in Tables IV-Ai, ii, iii, IV-Bi, ii, IV-Ci, ii, iii and IV-Di, ii, respectively.

(i) *Cane Quality.*—It will be seen from Tables IV-Ai, ii and iii that the average seasonal pol per cent cane in the last four years has varied from about 11 ·3 to 14 ·1 with primary juice purity variation from 77 to 86 ·3. Majority of factories have had generally pol per cent cane of the order of 12-13 and primary juice purity of 84-85. The lowest purity juice has been handled by Pithapuram during 1959-60 and 1960-61 which has thereafter improved to 84 ·1 and 85 ·3 in 1961-62 and 1962-63 seasons respectively. Factories which have recorded comparatively better cane quality are Samalkot, Chagallu, Challapalli, Etikoppaka, Vuyyuru and Chittoor. Chittoor factory has recorded the highest pol per cent cane of 14 ·06 in 1962-63 season. In general the cane quality is good and generally some improvement has taken place from year to year. Seethanagaram, Bobbili, Tuni, Palakol and Chodavaram factories receive relatively poorer cane.

Fibre per cent cane is generally around 13 to 16 though in some factories *viz.*, Etikoppaka, Pithapuram, Chodavaram and Tuni in some years lower figures of 10 ·3 to 12 have also been recorded.

(ii) *Time Account.*—Tables IV-Bi and ii show the time account. It will be seen that the duration of season has generally been of the order of 140 to 160 days. Samalkot and Pithapuram have had the largest duration of 187 and 188 days respectively in the season 1960-61 which fell to 133 and 67 days in the season 1962-63. The duration has fallen considerably in respect of all factories during the season 1962-63 as compared to previous season. Fall in duration in Seethanagaram from 163 to 82, Bobbili 146 to 109, Chagallu 141 to 111, Challapalli 142 to 104, Chelluru 127 to 73, Pithapuram 127 to 67, Chittoor 134 to 74, Etikopakka 134 to 109 and Tanuku 161 to 135 is of particular significance.

The percentage of hours lost to total available are high in a number of factories. The normal timeloss should not exceed 10-12 per cent but it will be seen that in many factories (7 out of 15) the loss is above 20 per cent. In case of new factories the timeloss appears to be more for one or two seasons due to initial teething troubles. Performance of some factories in this respect *viz.*, Samalkot and Vuyyuru has been satisfactory where the time loss is 10-11 per cent and 4-5 per cent respectively.

(iii) *Recovery and Total Losses.*—Tables IV-Ci, ii and iii show the position of recovery and total losses. It will be seen that in the factories which have fairly good cane quality *viz.*, Samalkot, Chagallu, Challapalli, Etikoppaka, Vuyyuru and Chittoor, the average seasonal recovery of 10 ·30 to 10 ·76 has been obtained. Chagallu and Chittoor have recorded figure of 11 ·15 and 11 ·33 respectively. The general level of recovery is of the order of 10 per cent. In Tuni recovery has been less than 9 ·0 and Palakol in its trial season recorded a figure of 7 ·09 with only 1 ·93 total losses *i.e.*, low recovery on account of poor quality of cane.

Total losses in ten factories ranged between 2 to 2·5 per cent in 1962-63 season and between 2·5 to 2·86 in others, Chittoor and Pithapuram being the worst on the list with 2·75 and 2·86 per cent total losses respectively in 1962-63 season. The factories which have recorded the lowest losses are Palakol, Chagallu, Seethanagaram and Vuyyuru whose level of losses has been of the order of 1·93 to 2·20 per cent only. In the matter of reduced overall extraction the number of factories in the various efficiency groups are as follows :—

Reduced overall Extraction	No. of factories
Up to 82	3
82—84	8
Above 84	4

It will be thus seen that of 15 reporting factories four factories have good efficiency, eight have average or medium efficiency and three factories have poor overall efficiency.

The breakup of the total losses shows that five factories are losing more in molasses, recording sugar lost in molasses per cent cane of the order of 1·32 to 1·45. The losses are high on account of higher production of molasses which is up to about 4·5 per cent on cane and also high purity of molasses which in case of these factories ranges between 34 to 36. The lowest purity of molasses is recorded by Challapalli and Samalkot factories. Pithapuram, Etikoppaka, Vuyyuru and Seethanagaram are the factories throwing out relatively higher purity exhaust molasses being of the order of 35-36 units as against a normal value of 30-32 units easily obtainable in plants with reasonably modern equipment and good operative techniques.

The loss of sugar in bagasse is also on higher side ranging between 1·0 to 1·24 in case of Tanuku, Amadalavalasa, Pithapuram, Chittoor, Samalkot, Bobbili, Seethanagaram and Tuni factories. Tuni factory has the maximum *viz.*, 1·24. In the rest of the factories it is ranging between 0·77 to 0·93, the lowest losses under this head being recorded by Vuyyuru.

(iv) *Fuel Consumption.*—Tables IV-Di and ii give the position with regard to fuel consumption. It may be seen that almost all the factories have consumed their entire production of bagasse and have used some extra fuel also. The total fuel consumption in terms of bagasse has varied from 26 to 29 in two factories, 29-33 in three and 33 to 36 in four and above 36 per cent in two factories. Chodavaram and Chittoor have consumed very high percentage of fuel being 41·69 and 53·75 per cent respectively perhaps due to their first season and initial difficulties.

The main reasons for higher fuel consumption in a few factories and losses in fuel account are that the factories have no heat recovery systems with the boilers, resulting in poor efficiencies and wastage of fuel. On the consumption side also very few heat recovery measures have been adopted in the boiling house.

Table V gives particulars of the existing daily cane crushing capacity of the factories, specifications of their existing milling tandem, expansion for which license has already been granted and expansion as asked for by the factories. Financial requirements for expansion and/or modernisation as estimated by the factories are also given.

2.9 Labour strength and productivity

Table VI-A shows the labour strength actually employed in Andhra Pradesh factories, the labour considered surplus at present and the labour that would become surplus after modernisation.

It will be seen that there is practically no surplus labour except about 50 in Pithapuram and 21 in Etikoppaka factories and even after modernisation the position will remain the same *i.e.*, after modernisation also only these factories would have a surplus labour totalling only 71, which also, as learnt during discussions will be absorbed in the expansion programme.

Table VI-B shows the productivity of each factory in terms of man days per tonne of sugar for four years. It will be seen that in Vuyyuru, Chelluru, Challapalli and Chagallu the productivity has been fairly good *viz.*, 3·2 to 7·2 man days per tonne of sugar produced. Samalkot, Tuni, Amadalavalasa have also improved the productivity during 1962-63 having recorded, 7·7, 8·7 and 6·0 from a level of 8·9, 11·1 and 9·8 respectively in the previous season. Only in a few factories *viz.*, Seethanagaram, Bobbili and Pithapuram the productivity is lower, being 14·6, 11·2 and 11·79 respectively.

2.10 Utilisation of by-products

Tables VII-A, VII-B and VII-C show the position with respect to utilisation of by-products.

It will be seen that molasses is almost entirely used for production of alcohol and is supplied by the factories to the distilleries at Government controlled price. Some molasses is also however released for sale to permit holders and for export.

The press-mud is used as manure in the factory farms or sold out to the growers for the same purpose. Vuyyuru factory has got a wax plant which is worked when market for wax becomes available. As a general case the possibilities for the utilisation of molasses and press-mud in a manner to reduce the cost of production to any appreciable degree are remote. Molasses utilisation for cattle feed and manufacture of chemicals however offers a better scope for increased returns. The Vuyyuru factory is proposing to have a butyl alcohol plant. Chagallu factory is proposing to have a plant for cattle feed if allowed to manufacture raw sugar and promote piggaries for export of pigs. They propose to prepare pig feed with a mixture of molasses, rice bran and groundnut cake. In case white sugar is made they propose to make fodder yeast from molasses for export.

As regards bagasse almost all factories are using their entire production as fuel and do not save any bagasse. At present even some extra fuel is also used by the factories but scope is there for saving the bagasse by adopting suitable means of steam and fuel economy.

Vuyyuru factory is reported to be investigating the possibilities of putting up a 100 ton paper plant by developing the machinery by themselves. Chagallu factory is also proposing to substitute bagasse by oil or coal, depith the bagasse and use it for paper manufacture.

3. ECONOMIC ASPECTS

3.1 Financial set-up

The nature of ownership, the share capital, the reserves and net worth of the 17 Andhra Pradesh sugar factories as given in their Balance Sheets for 1961-62 are as follows :—

(Amounts in lacs of Rs.)

Sl. No Name of Unit	Paid up Capital		Total	Reserve	Total net worth
	Original	Bonus issues			
Public Limited					
1. Seethanagaram 2. Bobbili	33·00	3·50	36·50	17·11	53·61
3. Challapalli .	66·20	—	66·20	6·63	72·83
4. Chelluru . .	50·00	—	50·00	—	50·00
5. Pithapuram .	22·97	—	22·97	8·19	31·16
6. Tanuku . .	69·97	—	69·97	39·99	109·96
7. Shakarnagar (I & II) .	104·72	41·17	145·89	136·11	282·00
8. Vuyyuru . .	83·00	28·85	111·85	148·76	260·61
9. Samalkot*					
10. Chagallu**					
	429·86	73·52	503·38	356·79	860·17
Cooperative					
1. Tuni . .	11·27	—	11·27	—	11·27
2. Chittoor . .	37·30	—	37·30	—	37·30
3. Chodavaram .	38·68	—	38·68	0·17	38·85
4. Palakol . .	28·83	—	28·83	0·14	28·97
5. Etikoppaka .	14·71	—	14·71	32·18	46·89
6. Amadalavalasa .	40·46	—	40·46	0·36	40·82
7. Anakapalle† .					
	171·25	—	171·25	32·85	204·10
GRAND TOTAL	601·11	73·52	674·63	389·64	1064·27

सत्यमेव जयते

*Combined Balance Sheets with Pugalur Factory of Madras.

**Combined Balance Sheets with Rayagada Factory of Orissa.

†Balance Sheets not received.

It will be seen that out of the share capital of Rs. 6·75 crores, Rs. 0·74 crore has been subscribed as bonus shares, the remaining amount of Rs. 6·01 crores being the originally paid up capital. At the close of 1961-62 a sum of Rs. 3·90 crores was also available in reserves bringing the value of total net worth to Rs. 10·64 crores. Thus the profits so far retained by Andhra Pradesh sugar industry in the form of bonus shares and reserves aggregate Rs. 4·63 crores which means an addition of 77·1 per cent to the initially paid up capital.

Financial analysis [similar to the analysis made by the Tariff Commission in paragraph 15·5 of their report on the cost structure of sugar (1959) for the years 1953-54 and 1957-58] has been made by the Committee for the years 1953-54, 1957-58 and 1961-62 on the basis of Balance Sheets received from sugar factories and the results are shown below:—

(Amount in lacs of Rs.)

Sl. No.	Particulars	1953-54	1957-58	1961-62	Comparative development 1957-58 over 1953-54	Comparative development 1961-62 over 1957-58
1.	No. of Units .	7	9	14	2	5
2.	Gross Block .	509·58	1045·89	2252·60	536·31	1206·71
3.	Accumulated Depreciation . .	196·47	317·74	549·04	121·27	231·30
4.	Net Block . .	313·11	728·15	1703·56	415·04	975·41
5.	Net Worth .	365·92	564·42	1064·27	198·50	499·85
6.	Surplus of Net Worth over Net Block . .	52·81	—163·73	—639·29	—216·54	—475·56
7.	Debentures & Long Term Loans .	104·72	185·63	671·08	80·91	485·45
8.	Available Resources . . .	157·53	21·90	31·79	—135·63	9·89
9.	Investment	38·74	51·09	55·96	12·35	4·87
10.	Investment as % of Surplus Net Worth	73.4	—	—	—	—
11.	Net Block as % of Gross Block .	61·4	69·6	75·6	—	—

सत्यमेव जयते

It will be seen that at the close of 1961-62, as against Rs. 17·03 crores net block, the net worth of the industry was Rs. 10·64 crores only. The shortfall of Rs. 6·39 crores was filled up by obtaining long term loans worth Rs. 6·71 crores. The industry also invested a sum of Rs. 0·56 crore in the form of shares and debentures of other Companies and in Government Securities.

These figures are also indicative of the development that has taken place during the last eight years. Two new units were set up during the period of four years ending 1957-58 and another 5 units during the period of next four years ending 1961-62. It will appear that during the period of 4 years ending 1961-62 the industry has made a gross investment in fixed assets of the order of Rs. 12·07 crores as against Rs. 5·36 crores in the preceding four years. The addition to net block during the last 4 years has been of the order of Rs. 9·75 crores as against Rs. 4·15 crores in the preceding 4 years. The bulk of the addition to the net block has been financed through long term loans from external resources. The fixed assets stand depreciated to the extent of 24·4 percent at the close of 1961-62 as against 30·4 percent four years back and 38·6 per cent eight years back.

The foregoing analysis would show that on the whole there has been good effort on the part of Andhra Pradesh Sugar Industry towards its development.

3.2 Profit and loss position

The profit and loss position as revealed from Balance Sheets of Andhra Pradesh Sugar Factories for the last 10 years is given in Table VIII-A and it would generally indicate the financial position of the industry. It will be seen from the table that almost all the old factories of Andhra Pradesh have been making good profits all these years. Data in respect of newly established units are not generally available. The average profit during the entire period of 10 years works to Rs. 7·64 lacs per year per factory-made up of an average profit of Rs. 8·51 lacs for the old factories and an average loss of Rs. 0·50 lac for the two new units of Challapalli and Chelluru.

Table VIII-B is based on a study of profit or loss made by factories in various capacity slabs during the two periods of 5 years each, *viz.* 1952-53 to 1956-57 and 1957-58 to 1961-62 and also for the entire period of 1952-53 to 1961-62. The position is summarised below :—

	1952-53 to 1956-57	1957-58 to 1961-62	1952-53 to 1961-62
(*i*) *Factories incurring loss.*			
Number	1	1	1
Average loss per year per factory (in lac of Rs.)	0·14	3·59	3·59
(*ii*) *Factories making profit.*			
Number	6	8	8
Average profit per year per factory (in lac of Rs.)	7·24	10·06	8·13
(*iii*) *Total*			
Number	7	9	9
Average profit or loss per year per factory	+6·19	+8·99	+7·64

It will be seen that in the first five year period 6 factories out of 7 made an average profit of Rs. 7·24 lacs per year per factory. In the second five year period only Chelluru factory incurred loss and the remaining 8 factories made an average profit of Rs. 10·06 lacs per year per factory. In the entire 10 year period the average profit for the whole region was Rs. 7·64 lacs per year per factory.

Table VIII-C shows the dividends paid by Andhra Pradesh sugar factories since 1952-53. It will be seen that the old units of Bobbili, Seethanagaram, Shakarnagar, Vuyyuru and Tanuku have been paying good dividends each year.

4. Specific Problems of the Factories

1 & 2. Seethanagaram and Bobbili

1. Lack of irrigation facilities.
2. Tube-wells and construction of dams on small rivers and streams in the factory area suggested for which assistance should be available from the State Government.
3. Bobbili capacity 450 tons considered uneconomic. Expansion proposed to 1,000 tons.
4. Seethanagaram capacity 600 tons, expansion proposed to 1,000 tons.

3. Tuni

1. Laying *pucca* roads within the factory zone.
2. Control on Jaggery.
3. Present capacity 500 tons. Desired 1,000 tons at an estimated cost of Rs. 50 lacs.

4. Chagallu

1. Capacity 800 tons. Proposed for 3,000 tons.
2. Wants entire production as raw sugar for export.
3. No by-product industry. Proposed to have a plant for cattle feed and promote piggeries.
4. In case white sugar is made proposes to make fodder yeast from molasses for export.
5. Bagasse will be depithed for use in paper plant.

सत्यमेव जयते

5. Challapalli

1. For improving the transport, Zila Parishad and Highways Department have to undertake the construction of roads in the factory areas.
2. Six bridges, three culverts and 30 pipe sluices have to be constructed by Zila Parishad from the grants of the State Government from sugarcane cess and purchasetax revenues.
3. Restrictions should be imposed on the purchase and sale agreement of *gur* for improving cane supply position.
4. Present capacity 800 tons. Expansion desired to 2,500 tons.

6. Samalkot

1. Supply of Dunlop carts at subsidized rates or on instalment basis.
2. Giving of loans to the cultivators to cover almost the entire cost of the cultivation of sugarcane.

3. Present capacity 800 tons, sought 1,000 tons.
4. There is a proposal for a cooperative factory at Burboopadi near Samalkot. The factory fears that it will seriously affect their cane supplies.
5. One *khandsari* plant is going to be put up near Samalkot itself. The Government should not give license to it.
6. Rehabilitation needs Rs. 38 lacs.
7. Want manufacture of raw sugar in view of nearness to Vizag port (120 miles).
8. The factory should be consulted in respect of the development of roads.

7. Chelluru

1. Non-availability of fertilizers is one of the bottlenecks in cane supply.
2. Advances for seed, manures and other miscellaneous expenses to be given to the growers.
3. High prices of *gur* in the area and consequently diversion of cane for *gur* making.
4. Present capacity 1,000 tons. Desired 1,200 tons at a cost of Rs. 5 lacs.

8. Chittoor

1. Higher prices for sugarcane should be given in view of higher jaggery prices.
2. Supply of manures and interest free loans.
3. Cash advances to the members to make them supply cane to the sugar factory when the *gur* prices are high.
4. Present capacity 1,000/1,200 tons Desired 2,000 tons at a cost of Rs. 55 lacs.

9. Chodavaram

1. Advances should be given to cultivators for cultivation expenses to wean them from the habit of borrowing money from *gur* merchants on the promise of cane supply for *gur* manufacture which seriously affects the supplies of sugarcane to the factories.
2. The reserved area of the factory should be extended to the neighbouring Talukas of Narsipatnam, Anakapalle and Kota.
3. Steps should be taken against the increase in the price of jaggery.
4. Present capacity 1,000 tons. Expansion sought 2,000 tons.
5. *Gur* prices in the area are high probably on account of its use for illicit distillation.

(6) Even the cooperative sugar factory grower-members do not supply full cane to the factory as jaggery prices are high.

10. Palakol

1. Payment of transport charges at the rate of 37 paise per metric ton for a distance beyond three miles should be made.
2. Credit facilities and cash loans for seed and manures should be given to the growers.
3. Permission should be given by the Government to grow sugarcane in 'C' schedule lands.

11. Etikoppaka

1. Facilities for increased irrigation such as loans for purchase of oil engines, installation of electric pumps and digging of wells.
2. Fertilizers to be stocked before the commencement of the planting season and to be issued on loan to the cane growing members free of interest. Amount should be realised in the following crushing season.
3. Seed farms should be maintained by State Agricultural Dapartment to supply better varieties of seeds.
4. Insecticides should be supplied on 50 per cent of the cost price in the areas where insect attack is in epidemic form.
5. Subsidies to be paid to the growers for planting new varieties.
6. Improved cultivation practice such as planting in deep trenches, application of manures at the optimum time and dose and proper treatment of ratoons and harvesting crop at the correct maturity stage are to be adopted by the growers and necessary demonstrations are to be laid down in an intensive manner.
7. Capacity of 1,000 tons considered uneconomic, desires expansion to 2,000 tons.
8. Cost of cultivation of cane in the area high and considerable development in respect of irrigation required.
9. Incidence of two monsoons, namely the South East and South West monsoon. The South East monsoon is very strong and causes heavy lodging of cane necessitating propping by means of bamboos, which is costly.
10. Considerable competition with jaggery manufacturers. Suggested control on both the commodities, namely sugar and jaggery.

12. Pithapuram

1. Most of the area is fed by Yelluru canal which is not able to feed sufficiently at present. If the proposed Yelluru reservoir project

materialises sufficient water for developing cane in the area will be available.

2. Capacity 1,000 tons, proposed 1,300 tons.
3. Factory is very old, needs rehabilitation for which financial help is needed from Government.
4. Factory situated near Masulipattam port and wants to manufacture raw sugar for export.
5. Diversion of cane about 30 per cent.

13. Amadalavalasa

1. Measures for improving feeder roads have to be taken up by the Government.
2. The target of supply of sugarcane can be obtained by giving subsidy on seed, transport and credit facilities in the shape of seed, manure and cultivation expenses.
3. The present capacity 1,000 tons. Desired 2,000 tons at a cost of Rs. 59·4 lacs.
4. The matter of giving advances for sugarcane cultivation was taken up with the Ministry of Community Development and also with the Reserve Bank. The Reserve Bank did not agree on the ground that this will affect the working of credit societies in the areas. It was estimated that a 1,000 tons factory will require Rs. 10 lacs as its productive finance.

14. Tanuku

1. No irrigation facilities are available during the hot month of May as the Godavari river canals are closed in this month. Proposed sinking of deep wells.
2. Area mostly water logged. Drainage necessary.
3. Inadequate road facilities in the factory area.
4. Red rot control scheme should be taken up by the Government.
5. *Gur* manufacture should be discouraged by imposing excise duty as for sugar industry.
6. Capacity 1,250 tons considered enough. Factory needs modernisation at a cost of Rs. 85 lacs.

15 & 16. Shakarnagar I & II

1. Problem of drainage, the area is water logged.

2 Diversion of cane to *khandsari*. Six *khandsari* factories were reported to be working in the area.

3 Import of agricultural implements needed for the reclamation of about 4,000 acres of the factories' own farm in India.

4 The factory has to transport about 40% of their cane through the Central Railways. Expenses on transport have increased from 46 Paise per mile in 1960-61 to 99 Paise per ton per mile now. Deduction of only 32 Paise is provided for in the cost structure and in this item the factory loses heavily.

5 Difficulty of getting cylinder for storing CO_2 which is being made in the fermenters of the alcohol factory.

6 Difficulty in working the confectionery round the clock for want of sugar.

7 The factory had an idea of the paper plant which is now given up but some private party is taking it up where the factory's saved bagasse will find an outlet.

17. Vuyyuru

1 Cane area should be developed with improved variety of Co 997 and Co 975.

2 Present capacity 2,540 tons, proposed expansion to 5,000 tons.

3 Factory ideally situated for export, being 23 miles from Masulipattam Port.

4 Can build godowns at port and can save Rs. 40 per ton as freight charges.

सत्यमेव जयते

5 Has a distillery and proposing to recover Potash and Yeast from distillery slops. Also proposing a Butyl Alcohol Plant for export of Butyl Alcohol.

6 Has got a wax plant. Can be worked on orders.

7 Factories should be allotted rehabilitation allowance in the price of sugar which could be kept as a special reserve to meet the needs of rehabilitation in due course or create depreciation fund on replacement value.

8 Return from molasses is very inadequate. Market price return should be allowed to the industry. The present cost allowed does not even meet the cost of storage.

9 Molasses to be utilised for cattle feed particularly for pig feed in view of the fact that the pigs have a good market in the Middle East countries.

5. RECOMMENDATIONS

The foregoing study of the position and problems of the sugar industry in Andhra Pradesh will reveal that:—

(*i*) The climatic and soil conditions of Andhra Pradesh particularly in the regions where the sugar industry is at present located are very favourable for the sugarcane crop. Yields per acre are quite high and the quality of sugarcane grown is fairly good. There is, however, considerable scope for further improvement.

(*ii*) Requirements in respect of irrigation, manures and fertilisers, and supply of seed are being substantially met and steps are being taken to cover the gap in the near future.

(*iii*) Varietal position is fairly satisfactory and the new varieties being introduced are giving promising results, in which sugarcane research carried out in the State has shown good results.

(*iv*) Communications, however, are not yet adequate but plans are under way which should improve the position considerably in the IV Plan period.

(*v*) Efforts for cane development are being made] both at State and factory levels.

(*vi*) The problem of diversion of cane supplies exists to some extent in certain areas but it has not materially affected the cane supplies to sugar factories.

(*vii*) The expansion of the industry in the State has been quite substantial in the last few years and the State is now surplus with respect to its own consumption needs. Since sugar from this State will have to be sent to areas outside the State, the need for reducing the cost of production is all the more important. This will have to be achieved both by reducing the cost of cultivation of cane as well as bringing down the manufacturing cost. The freight advantage enjoyed by the factories of the State while it was deficit in sugar has disappeared and calls for every effort at reducing the cost of production to maintain the profitability of the factories.

(*viii*) On the factory side, it is seen that 13 out of 18 existing working factories are of a capacity of 1000 tons or below. Several of them are old and need a considerable degree of modernisation as well as expansion. Even the rest of them need modernisation in some respects.

(*ix*) Most of the factories have average or poor efficiency. Fuel consumption could be reduced in a large majority of factories, thus providing one of the means for bringing down the cost of production.

(*x*) The profitability of the factories has been quite good, the average per year per factory being Rs. 7·64 lacs.

In the light of the above analysis the Committee's recommendations on various aspects are as follows:—

(1) Rehabilitation, modernisation and expansion

The Committee feels convinced that the scope of expansion exists in almost all factories. The Committee has examined the needs of modernisation and expansion of each factory in the light of the capacities of their milling plants, and made an assessment of the cost involved which is given in the following table :—

Sl. No.	Name of Factory	Existing daily cane crushing capacity (tonnes) 1963-64 season	Expansion license already granted (tonnes)	Expansion recommended by the Committee (Tonnes)
1.	Anakapalle	305	1,200	1,200
2.	Seethanagaram	305	600	1,000
3.	Bobbili	457	850	1,000
4.	Tuni	508	—	1,000
5.	Chagallu	813	1,250	1,250
6.	Challapalli	813	1,250	1,250
7.	Samalkot	813	1,000	1,200
8.	Chelluru	1,016	—	1,500
9.	Chittoor	1,016	1,600	1,800
10.	Chodavaram	1,016	—	1,800
11.	Palakol	1,016	—	1,500
12.	Etikoppaka	1,016	—	1,200
13.	Pithapuram	1,016	1,300	1,300
14.	Amadalavalasa	1,219	1,600	1,800
15.	Tanuku	1,270	—	Modernisation only
16. 17.	Shakarnagar I Shakarnagar II	4,572	—	Modernisation only
18.	Vuyyuru	2,540	—	3,500
	TOTAL	19,711		28,142

In the case of Anakapalle factory there are two small inefficient milling tandems and the Committee suggests these two to be replaced by a modern plant of 1,250 tonnes capacity capable of expansion to 2,000 tonnes.

सत्यमेव जयते

The total cost for rehabilitation, modernisation and expansion of the above factories has been estimated by the Committee as Rs. 7·5 crores. The Seethanagaram and Bobbili factories which belong to the same concern and are of 305 and 457 tonnes capacity only and have contiguous cane areas might well be merged and a new modern plant of 2000/3000 tonnes be put up instead.

(2) Cane development

(*i*) *Irrigation*—While the Committee is happy to note that the sugar factory areas are generally substantially saturated in respect of irrigation and the remaining deficiency is proposed to be made up in the Fourth Plan Period, the specific needs of Seethanagaram and Bobbili, Etikoppaka, Pithapuram and Tanuku as specified in Chapter IV of this report may be examined by the State Government. In Tanuku and Shakarnagar areas the drainage problem has to be looked into.

(*ii*) *Supply of Manures and Fertilisers*—The system of supply as well the position with regard to actual supplies being made are satisfactory but as a few factories have pointed out that adequate stocks of fertilisers have not existed so that the fertilisers could be supplied to the growers in proper time. The State Government may examine the position.

(*iii*) *Supply of Cane Seed*—There appears to be no difficulty in the distribution of good seed to the growers. It appears, however, that a few new varieties, rich in sugar as well as yield, have come up and need to be popularised. The State Government may examine the necessity of subsidising the supply of seeds of new varieties for quicker replacement of older and poorer varieties.

(3) Communications

The Committee feels that the development of communication is a major aspect which needs immediate attention of the State Government, because there is a considerable leeway still to be made up. It appears that more than 1000 kilometres of roads are still required in the sugar factory areas and there is need for about 10 bridges and about 800 culverts. The Committee recommends that the above needs should be urgently fulfilled under the usual contributory scheme of road development. If the necessary facilities are not available with the State Public Works Department in adequate measure, the assistance of sugar factories may be taken. The expenditure on roads is estimated to be about Rs. 6 crores and that of bridges and culverts about Rs. 30 lacs.

(4) Utilisation of by-products

Molasses

While molasses is being fully utilised for production of industrial alcohol, it has been pointed out that the controlled price of molasses did not meet the cost of putting up steel tanks for the storage of molasses and other handling charges. The Committee learns that the question of giving a higher price for molasses is under the consideration of the Government of India in the Ministry of Commerce & Industry. The increase in price will have to depend on how much the price of industrial alcohol could be increased so as to be still economical for alcohol-based products. A suggestion has been made that the molasses should be utilised for cattle feeding purposes. Experiment carried out abroad have shown that for every 4 lbs. of molasses fed to pigs, there is one lb. increase in weight. It further appears that there is a good market for pigs in South Eeast Asia and the possibility should, therefore, be examined of developing a proper molasses food for the pigs and rearing and exporting pigs to South East Asian countries to earn foreign exchange.

Bagasse

As regards bagasse, very few factories in Andhra Pradesh are at present saving bagasse, but the Committee believes that by effecting suitable measures of fuel and steam economy, there is considerable scope for saving bagasse. The surplus bagasse so obtained could be utilised for the production of pulp by individual factories which could be supplied to a central paper factory of economic capacity. It appears that one central paper plant of 75/100 tons capacity can be established at Rajamundry to absorb the surplus bagasse of sugar factories situated in East and West Godavari and Krishna districts.

(5) General

(*a*) *New Licensing.*—During discussions a point that was strongly placed before the Committee was that most of the future licensing of new capacity should be in Andhra Pradesh in view of its high productivity in sugar, nearness to ports, considerable amount of sugarcane and development work already done. While there is considerable force in this presentation, these and other aspects relating to the future pattern of development of the industry have been discussed in the All India report.

(*b*) *Productive Finance.*—Another point that was brought up, was the need for providing productive finance to cane growers for ensuring cane supplies to cooperative sugar factories particularly in the face of competition with *gur*. It has been suggested that the banks should advance through the sugar factories the required amount of finance for cane cultivation purposes before sowing time. The amount was estimated at Rs. 10 lacs for a 1,000 tons factory *i.e.*, in all 80 lakhs of rupees for 8 cooperative sugar factories of the State. It appears the Reserve Bank of India is not agreeable to this suggestion as it would adversely affect the working of credit societies. It is learnt that the system is working satisfactorily in Maharashtra and if so the Committee is of the view that the Government of Andhra Pradesh should pursue the matter with the Reserve Bank of India.

(*c*) *Diversion of Cane for Gur Manufacture.*—Though this problem has not assumed any serious proportion in Andhra Pradesh, it is none the less causing anxiety. In the context of increase in crushing capacities on account of expansions envisaged, the need for an assured supply of cane is inescapable. The Committee is of the opinion that assured supplies of cane can be made by resorting to long term bonding of cane and seeing to it that the contracts are honoured by both the contracting parties. As far as possible, *gur* and *khandsari* factories should not be allowed to operate in the reserved zones of sugar factories. A certain amount of propaganda is necessary to educate the growers supplying cane to sugar factories that their long-term interests lie in honouring their commitments with the factories and not in yielding to temporary temptations afforded by occasional spurts in *gur* price. If, however, they do wish to manufacture *gur* or supply cane for *gur* manufacture, they should grow additional quantity of cane, but not jeopardise the working of the factories with which their own interests are permanently linked.

(*d*) *Raw Sugar.*—Sugar factories in Andhra Pradesh have also suggested that they should be given preference for the manufacture of raw sugar for export purposes as the State has three good ports, namely, Visakhapatnam, Kakinada and Masulipattam situated close to sugar factories. If this is done a considerable saving could be made in the transport cost and raw sugar could be exported at a cheaper price. The Committee agrees that the suggestion is reasonable and might be examined by the Government of India. If the factories in Andhra Pradesh make raw sugar, their molasses would be suitable for cattle feed purposes and the suggestion for utilising it as pig feed could then be implemented. In the mean time, necessary experimental work in regard to developing a suitable composition for pig feed and in respect of feed trials might be carried out by the State Government.

(6) Finance required

Financial requirements in Andhra Pradesh are estimated as follows:—

	Crores of Rs.
(*i*) Rehabilitation, modernisation and expansion	7·50
(*ii*) Development of irrigation	8·53
(*iii*) Communication	6·30
TOTAL	22·33

TABLE I-A

Area Under Cane

Sl. No.	Name of factory	Capacity (tonnes/ day)	Area under Cane (000 acres) 1959-60	60-61	61-62	62-63
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	8·00	8·00	9·00	7·50
3.	Bobbili	457	8·00	8·00	8·00	7·00
4.	Tuni	508	..	..	6·50	6·00
5.	Chagallu	813	..	..	4·50	7·31
6.	Challapalli	813	2·07	3·55	4·90	4·08
7.	Samalkot	813	11·20	12·80	11·80	10·30
8.	Chelluru	1,016	3·56	4·10	4·10	4·00
9.	Chittoor	1,016	..	..	...	14·50
10.	Chodavaram	1,016	..	..	...	20·00
11.	Palakol	1,016	..	...	...	6·03
12.	Etikoppaka	1,016	7·00	7·10	8·50	8·28
13.	Pithapuram	1,016	6·02	6·31	5·70	4·40
14.	Amadalavalasa	1,219	..	...	4·00	6·00
15.	Tanuku	1,270	8·00	16·00	15·00	10·00
16.	Shakarnagar I	4,572	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II					
18.	Vuyyuru	2,540	8·88	10·90	9·98	7·83
			62·73	76·76	91·98	123·23

N.A.—Not Available.

Source—Factory Returns.

सत्यमेव जयते

TABLE I-B

Estimated Yield of Cane per Acre

Sl. No.	Particulars	Yield per acre (tonnes) 1959-60	1960-61	1961-62	1962-63
1.	In whole State	30·75	29·08	30·55	31·80
2.	In development zones	34·93 (old) 32·51 (new)	35·66 (old) 32·81 (new)	32·38	32·44

ource—Indian Central Sugarcane Committee.

TABLE I-C

Per cent Utilisation of Cane Crop for White Sugar

Sl. No.	Name of Factory	White sugar			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	56·8	53·0	63·0	48·5
3.	Bobbili	69·2	70·8	61·3	65·0
4.	Tuni	..	..	20·0	25·0
5.	Chagallu	..	..	40·0	39·0
6.	Challapalli	90·0	95·0	95·0	75·0
7.	Samalkot	85·8	80·5	80·8	86·4
8.	Chelluru	30·0	85·0	80·0	60·0
9.	Chittoor	..	..	..	10·0
10.	Chodavaram	..	..	—	4·5
11.	Palakol	N.A.	N.A.	N.A.	N.A.
12.	Etikoppaka	43·5	39·6	35·9	37·0
13.	Pithapuram	75·0	80·0	74·0	40·0
14.	Amadalavalasa	..	..	N.A.	N.A.
15.	Tanuku	45·0	32·0	33·0	31·0
16. 17.	Shakarnagar I Shakarnagar II	N.A.	N.A.	N.A.	N.A.
18.	Vuyyuru	100·0	100·0	100·0	100·0

N.A.—Not Available

Source—Factory Returns.

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of Factory	Capacity (tonnes/day)	Actual supplies made to the Factories (000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	50·00	51·00	63·00	34·00
3.	Bobbili	457	90·00	86·00	92·00	65·00
4.	Tuni	508	..	..	15·44	19·38
5.	Chagallu	813	..	..	68·59	59·83
6.	Challapalli	813	39·47	86·62	110·43	76·51
7.	Samalkot	813	117·69	140·52	112·32	105·99
8.	Chelluru	1,016	23·28	115·10	102·54	57·96
9.	Chittoor	1,016	..	..	..	33·55
10.	Chodavaram	1,016	..	..	..	27·00
11.	Palakol	1,016	..	..	..	1·47
12.	Etikoppaka	1,016	87·61	87·78	90·08	86·78
13.	Pithapuram	1,016	120·05	141·62	105·15	44·53
14.	Amadalavalasa	1,219	..	..	8·00	36·00
15.	Tanuku	1,270	108·00	170·00	166·00	133·00
16. 17.	Shakarnagar I Shakarnagar II	4,572	N.A.	N.A.	N.A.	N.A.
18.	Vuyyuru	2,540	235·09	332·83	290·24	248·32
			871·11	1,211·47	1,223·78	1,029·32

N.A.—Not Available.

Source—Factory Returns.

TABLE I-E

Percentage of Gate, Road & Rail Cane and Numbers of Growers

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Per cent gate cane	Per cent road cane	Per cent rail cane	No. of growers supplying cane to the factory (1962-63 season)
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	100·00	Nil	Nil	4,258
3.	Bobbili	457	100·00	Nil	Nil	5,411
4.	Tuni	508	100·00	Nil	Nil	1,095
5.	Chagallu	813	100·00	Nil	Nil	708
6.	Chellapalli	813	100·00	Nil	Nil	752
7.	Samalkot	813	100·00	Nil	Nil	3,048
8.	Chelluru	1,016	100·00	Nil	Nil	2,075
9.	Chittoor	1,016	100·00	Nil	Nil	2,070
10.	Chodavaram	1,016	100·00	Nil	Nil	3,570
11.	Palakol	1,016	Trial	season		1962-63
12.	Etikoppaka	1,016	79·8	20·2	Nil	2,254
13.	Pithapuram	1,016	100·00	Nil	Nil	1,657
14.	Amadalavalasa	1,219	67·0	33·0	Nil	3,135
15.	Tanuku	1,270	100·00	Nil	Nil	1,519
16.	Shakarnagar I	4,572	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II					
18.	Vuyyuru	2,540	100·00	Nil	Nil	2,485
						34,037

N.A.—Not Available
Source—Factory Returns

TABLE II-Ai

Irrigation

Sl. No.	Name of factory	Area irrigated per cent cultivable	Area expected to be irrigated by already proposed works (acres)	Balance area to be irrigated (acres)
1.	Anakapalle	N.A.	1,000	2,000
2.	Seethanagaram	52·0	..	26,684
3.	Bobbili	63·0	3,000	10,815
4.	Tuni	40·0	..	71,482
5.	Chagallu	N.A.	N.A.	N.A.
6.	Challapalli	96·0	3,200	6,426
7.	Samalkot	74·0	1,000	12,256
8.	Chelluru	N.A.	N.A.	N.A.
9.	Chittoor	N.A.	N.A.	N.A.
10.	Chodavaram	N.A.	N.A.	N.A.
11.	Palakol	N.A.	N.A.	N.A.
12.	Etikoppaka	22·0	750	219,250
13.	Pithapuram	N.A.	6,660	—
14.	Amadalavalasa	N.A.	N.A.	N.A.
15.	Tanuku	90·0	2,000	11,800
16.	Shakarnagar I	100·0	..	..
17.	Shakarnagar II	100·0	..	..
18.	Vuyyuru	92·0	1,500	11,500

N.A.—Not Available.
Source—Factory Returns.

TABLE II-Aii

Irrigation

Sl. No.	Name of the District	Approximate area to be benefited in acres	Approximate area to be grown on sugarcane in rotation	No. of wells to be sunk	No. of oil engines or motor pump sets	Sugarcane production output
1.	Srikakulam . . .	21,600	14,400	2,700	2,700	1,39,300
2.	Visakhapatnam . .	24,800	16,540	3,100	3,100	1,65,400
3.	East Godavari . .	12,500	8,340	1,550	1,550	66,720
4.	West Godavari . .	8,800	6,000	1,100	1,100	45,800
5.	Krishna . . .	3,440	2,300	430	430	13,800
6.	Chittoor . . .	13,600	9,000	1,700	1,700	72,000
7.	Anantapur . . .	5,600	3,800	700	700	38,000
8. 9.	Nizamabad Medak } . .	8,000	5,360	1,000	1,000	53,600
	TOTAL . .	98,340	65,740	12,280	12,280	5,94,720

NOTE.—It is estimated that a sum of Rs. 853·1 lacs will be needed for this purpose of which Rs. 138·05 lacs are to be given as subsidy for digging of about 12,280 wells while the remaining amount can be recovered as loans. This provision is estimated to assure irrigation to about 98,000 acres out of which 65740 acres will be under sugarcane.

Source—State Irrigation Department.

TABLE II-B

Cane Seed Requirements

Sl. No.	Name of Factory	Amount of seed requirement (yearly) tonnes	Amount of seed proposed to be distributed by Development Deptt. and any other Agency (Yearly) Tonnes	Balance requirement.
1	2	3	4	5
1.	Anakapalle	18,465	Through ryots themselves	..
2.	Seethanagaram . .	7,000	Individual grower arranges himself.	7,000
3.	Bobbili	12,000	Small quantity is being distributed from the factory farm lands.	12,000
4.	Tuni	22,500	300 tons of seed by the factory management.	22,200
5.	Chagallu	N.A.	N.A.	N.A.
6.	Challapalli	16,852	The seed will be raised from factory farms.	..
7.	Samalkot	9,000	1,000	8,000

TABLE II-B—*contd.*

1	2	3	4	5
8.	Chelluru	N.A.	N.A.	N.A.
9.	Chittoor	N.A.	N.A.	N.A.
10.	Chodavaram	N.A.	N.A.	N.A.
11.	Palakol	N.A.	N.A.	N.A.
12.	Etikoppaka	15,000	6,000	9,000
13.	Pithapuram	12,672	No Development Section. It has been newly started from July 1964.	—
14.	Amadalavalasa	N.A.	N.A.	N.A.
15.	Tanuku	5,000	3,000	2,000
16.	Shakarnagar I	16,510	Farm	
17.	Shakarnagar II	28,448	Home Farm	..
18.	Vuyyuru	29,240	Seed requirements are met from raising short crop and top portions of the sets.	..
	TOTAL	192,687		60,200

N.A.—Not Available.

Source—Technical Officer, Co-operative Sugar Factories.

TABLE II-C

Means of Communications

Sl. No.	Name of Factory	Existing *pucca* roads in factory zone (km.)	Requirement		
			Pucca roads in km.	No. of bridges	No. of culverts
1.	Anakapalle	N.A.		4	20
2.	Seethanagaram	81	44	1	15
3.	Bobbili	520	35	1	15
4.	Tuni	146	220	1	150
5.	Chagallu	N.A.	N.A.	N.A.	N.A.
6.	Challapalli	96	104	..	200
7.	Samalkot	Highways	..	1	25
8.	Chelluru	N.A.	N.A.	N.A.	N.A.
9.	Chittoor	N.A.	N.A.	N.A.	N.A.
10.	Chodavaram	N.A.	N.A.	N.A.	N.A.
11.	Palakol	N.A.	N.A.	N.A.	N.A.
12.	Etikoppaka	77	8	1	2
13.	Pithapuram	154	108	..	..
14.	Amadalavalasa	N.A.	N.A.	N.A.	N.A
15.	Tanuku	100	60	1	20
16. 17.	Shakarnagar I Shakarnagar II	293	193	..	..
18.	Vuyyuru	250	270	..	350
	TOTAL	1,717	1,042	10	792

N.A.—Not Available.

Source—Technical Officer. Co-operative Sugar Factories.

TABLE III—A

Milling Plant

Sl. No.	Name of Factory	Capacity (tonnes/day)	Cane knives Total H.P. & No. of sets.	Milling tandem	Mill drive	
					Type	Total H.P.
1.	Anakapalle	305	40(1)	14/16″×24″	E	120
			90(2)	17/16″×32″	E	190
2.	Seethanagaram	305	150(2)	12/25″×42″	E	250
3.	Bobbili	457	165(2)	12/26″×48″	E	350
4.	Tuni	508	N.A.	N.A.	N.A.	N.A.
5.	Chagallu	813	160(2)	12/25″×48″	T	500
6.	Challapalli	813	150(2)	12/25″×48″	T	500
7.	Samalkot	813	150(2)	9/27″×54″	T	450
8.	Chelluru	1,016	240(2)	12/28″×56″	E	850
9.	Chittoor	1,016	350(2)	12/28″×56″	T	1,000
10.	Chodavaram	1,016	300(2)	12/30″×55″	E	650
11.	Palakol	1,016	300(2)	12/28″×56″	E	650
12.	Etikoppaka	1,016	225(2)	17/24″×48″	E	250
13.	Pithapuram	1,016	220(2)	14/24″×48″	T	150
14.	Amadalavalasa	1,219	300(2)	12/28″×55″	E	360
15.	Tanuku	1,270	175(2)	18/25″×48″	E	650
					E	400
16.	Shakarnagar I	4,572	325(2)	18/30″×60″	T	450
					T	670
17.	Shakarnagar II		400(2)	15/38″×78″	E	900
18.	Vuyyuru	2,540	255(2)	18/30″×59″	E	1,600
			205(2)	12/25″×48″	E	1,350
					T	500

E—Steam Engine.
T—Steam Turbine.

N.A.—Not Available.
Source—Factory Returns.

TABLE III—B

Power and Steam Generating Plants

Sl. No.	Name of Factory	Capacity (tonnes/day)	Power generating unit Total KW.	Boilers No. H.S. (sq. ft.) Pressure (p.s.i.g.)	H.S. per cent boiler H.S.	
					Economisers	Super-heater
1.	Anakapalle	305	250	2/9840/160	20·0	Nil
2.	Seethanagaram	305	22	2/7500/150	Nil	Nil
3.	Bobbili	457	Nil	4/15150/200	Nil	Nil
4.	Tuni	508	N.A.	N.A.	N.A.	N.A.
5.	Chagallu	813	750	1/7955/300	Nil	Nil
6.	Challapalli	813	750	2/14790/350	Nil	Nil
7.	Samalkot	813	760	4/16860/200	Nil	4.8
8.	Chelluru	1,016	800	2/16000/200	Nil	Nil
9.	Chittoor	1,016	1,250	2/15000/200	Nil	Nil
10.	Chodavaram	1,016	1,250	2/15860/200	Nil	Nil
11.	Palakol	1,016	1,340	2/12800/200	Nil	Nil
12.	Etikoppaka	1,016	500	5/18000/140	39·0	Nil
13.	Pithapuram	1,016	250	4/15600/160	18·0	Nil
14.	Amadalavalasa	1,219	1,250	2/12820/200	Nil	Nil
15.	Tanuku	1,270	500	3/16000/195	Nil	13·0
16.	Shakarnagar I	4,572	1,200	7/33460/160	Nil	7·0
17.	Shakarnagar II		1,800	6/45000/160	Nil	Nil
18.	Vuyyuru	2,540	1,250	8/33400/160 8000/300	Nil	3 boilers are having super-heaters.

N.A.—Not Available.
Source—Factory Returns.

TABLE III—Ci

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Juice weighing manual or automatic.	Juice heaters Total H.S. sq. ft.	Vertical or horizontal	V.L.Juice heater H.S.sq. ft.
1.	Anakapalle	305	M	1,604	H & V	Nil
2.	Seethanagaram	305	M	1,500	H	Nil
3.	Bobbili	457	M	1,000	H	Nil
4.	Tuni	508	N.A.	N.A.	N.A.	N.A
5.	Chagallu	813	A	6,430	H & V	Nil
6.	Challapalli	813	A	7,849	V	Nil
7.	Samalkot	813	A	2,430	V	Nil
8.	Chelluru	1,016	A	4,000	V	Nil
9.	Chittoor	1,016	A	3,000	V	Nil
10.	Chodavaram	1,016	A	3,000	V	Nil
11.	Palakol	1,016	A	3,000	V	Nil
12.	**Etikoppaka**	**1,016**	**A**	3,100	H & V	Nil
13.	Pithapuram	1,016	A	1,190	H	Nil
14.	Amadalavalasa	1,219	A	3,000	V	Nil
15.	Tanuku	1,270	A	3,400	V	Nil
16.	Shakarnagar I	4,572	A	4,800	H	Nil
17.	Shakarnagar II		A	7,200	H & V	Nil
18.	Vuyyuru	2,540	A	10,800	H	Nil

M—Manual Weighment.
V—Vertical.
N.A.—Not Available.
Source—Factory Returns.
A—Automatic Weighment.
H—Horizontal.

TABLE III-Cii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (Tonnes/day)	Sulphitation process batch or continuous	Settling	Filtration	Pre-heater H.S. Sq. ft.	Vapour cell H.S. Sq. ft.	Evaporators Type	Vapour bleeding
1.	Anakapalle	305	B	B	B	Nil	2,500	T	Nili
2.	Seethanagaram	305	B	B	B	Nil	Nil	T	Yes
3.	Bobbili	457	B	C	N.A.	1,000	Nil	Q	Yes
4.	Tuni	508	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
5.	Chagallu	813	C	C	C	Nil	Nil	Qui	Yes
6.	Challapalli	813	C	C	C	Nil	5,000	Q	Yes
7.	Samalkot	813	C	C	B	Nil	Nil	Q	Yes
8.	Chelluru	1,016	B	C	C	Nil	Nil	Q	Yes
9.	Chittoor	1,016	C	C	C	Nil	Nil	Q	Yes
10.	Chodavaram	1,016	C	C	C	Nil	Nil	Q	Yes
11.	Palakol	1,016	C	C	C	Nil	Nil	Q	Yes
12.	Etikoppaka	1,016	B	C	C	Nil	Nil	Q	Yes
13.	Pithapuram	1,016	B	C	B	Nil	Nil	Q	No
14.	Amadalavalasa	1,219	C	C	C	Nil	Nil	Q	Yes
15.	Tanuku	1,270	C	C	C	Nil	Nil	Q	Yes
16.	Shakarnagar I	4,572	B	C	C	Nil	Nil	Q	Yes
17.	Shakarnagar II		C	C	C	900	6,316	Q	Yes
18.	Vuyyuru	2,540	C	C	C	Nil	Nil	Q	N.A.

N.A.—Not Available.
Source—Factory Returns.
B—Batch.
T—Triple.
Qui—Quintuple.
C—Continuous.
Q—Quadruple.

TABLE III–Ciii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Pans		Low Grade crystallisers	
			Total capacity (tonnes)	Per cent coil capacity	No.	Per cent water cooled capacity
1.	Anakapalle	305	137	34	10	100
2.	Seethanagaram	305	54	30	5	Nil
3.	Bobbili	457	66	33	5	Nil
4.	Tuni	508	N.A.	N.A.	NA.	N.A.
5.	Chagallu	813	108	Nil	4	Nil
6.	Challapalli	813	130	Nil	6	Nil
7.	Samalkot	813	104	Nil	4	100
8.	Chelluru	1,016	84	14	5	Nil
9.	Chittoor	1,016	110	Nil	6	Nil
10.	Chodavaram	1,016	120	Nil	6	Nil
11.	Palakol	1,016	119	Nil	6	100
12.	Etikoppaka	1,016	90	23	6	Nil
13.	Pithapuram	1,016	113	26	7	29
14.	Amadalavalasa	1,219	113	Nil	6	Nil
15.	Tanuku	1,270	104	19	N.A.	N.A.
16.	Shakarnagar I	4,572	190	37	5	100
17.	Shakarnagar II		325	32	8	100
18.	Vuyyuru	2,540	288	12	9	Nil

N.A.—Not Available.
Source—Factory Returns.

TABLE III—Civ

Boiling House Equipment

Sl. No.	Name of factory	Capacity (tonnes /day)	Centrifugals			
			Ordinary		High Speed	
			No.	Size	No.	Size
1	2	3	4	5	6	7
1.	Anakapalle	305	6 7 5	18"×30" 18"×36" 20"×40"	..	..
2.	Seethanagaram	305	14 4	18"×30" 22"×42"	..	..
3.	Bobbili	457	2 18	18"×36" 18"×30"	..	..
4.	Tuni	508	N.A.	..	N.A.	..
5.	Chagallu	813	5	20"×42"	6	24"×48"
6.	Challapalli	813	..	..	6 3	24"×42" 20"×48"

TABLE III-Civ—*contd.*

1	2	3	4	5	6	7
7.	Samalkot	813	9 5	18″×36″ 24″×42″	..	..
8.	Chelluru	1,016	9 2	24″×42″ 20″×42″	..	—
9.	Chittoor	1,016	..	—	9	24″×48″
10.	Chodavaram	1,016	..	...	9	24″×48″
11.	Palakol	1,016	..	—	10 4	30″×40″ 30″×44″
12.	Etikoppaka	1,016	14	18″×36″	..	—
13.	Pithapuram	1,016	28	18″×36″	..	—
14.	Amadalavalasa	1,219	..	—	9	24″×48″
15.	Tanuku	1,270	..	—	9 3	24″×42″ 32″×49″
16.	Shakarnagar I	4,572	10 32 23	20″×42″ 18″×36″ 24″×40″	..	—
17.	Shakarnagar II				.. 3 3	.. 32″×49″ 24″×42″
18.	Vuyyuru	2,450	9	20″×42″	4 8 7	24″×48″ 25″×48″ 24″×42″

N.A.—Not Available.
Source—Factory Returns.

TABLE IV–Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent Cane			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	11·70	11·51	11·77	11·96
3.	Bobbili	12·02	12·17	12·58	12·59
4.	Tuni	..	..	11·87	11·49
5.	Chagallu	..	..	13·57	13·28
6.	Challapalli	12·15	12·09	12·56	13·07
7.	Samalkot	12·09	11·77	12·82	13·15
8.	Chelluru	11·90	12·18	12·41	11·94
9.	Chittoor	..	..	..	14·06
10.	Chodavaram	..	..	..	11·69
11.	Palakol	..	..	..	9·00
12.	Etikoppaka	12·34	11·55	13·01	12·13
13.	Pithapuram	11·76	11·39	12·74	12·93
14.	Amadalavalasa	..	..	11·55	11·99
15.	Tanuku	12·59	12·63	12·57	12·49
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	11·88	11·28	12·26	12·66

N.A.—Not Available.
Source—Factory Returns.

TABLE IV-Aii

Cane Quality Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent Cane			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	15·23	15·21	15·34	15·45
3.	Bobbili	14·61	14·58	14·36	14·33
4.	Tuni	..	..	13·23	10·31
5.	Chagallu	..	..	14·04	12·81
6.	Challapalli	15.47	15.89	15.80	15.39
7.	Samalkot	12·90	13·66	12·93	12·73
8.	Chelluru	12·96	15·19	14·34	14·08
9.	Chittoor	..	..	..	13·14
10.	Chodavaram	..	..	..	12·62
11.	Palakol	..	..	..	14·88
12.	Etikoppaka	11·51	11·40	11·92	12·24
13.	Pithapuram	11·85	12·82	13·65	13·88
14.	Amadalavalasa	..	..	14·52	15·27
15.	Tanuku	13·78	13·91	13·68	13·45
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	13·70	14·14	14·34	14·24

A.N.—Not Available.
Source—Factory Returns.

TABLE IV-Aiii

Cane Quality (primary juice purity)

Sl. No.	Name of Factory	Primary Juice Purity			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Sethanagaram	83·16	84·25	83·94	84·80
3.	Bobili	84·12	84·18	85·27	85·85
4.	Tuni	..	..	81·23	82·65
5.	Chagallu	..	..	84·10	85·49
6.	Challapalli	84·84	84·20	83·52	85·06
7.	Samalkot	81·14	79·24	83·96	84·63
8.	Chelluru	83·20	76·99	83·74	83·15
9.	Chittoor	..	..	..	84·48
10.	Chodavaram	..	..	..	81·55
11.	Palakol	..	..	..	84·27
12.	Etikoppaka	82·96	80·57	83·93	83·39
13.	Pithapuram	79·70	76·96	84·13	85·32
14.	Amadalavalasa	..	..	75·46	82·60
15.	Tanuku	85·84	85·29	85·17	86·01
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	84·44	81·84	84·59	86·29

N.A.—Not Available.
Source—Factory Returns.

TABLB IV-Bi

Time Account (Duration of of season)

Sl. No.	Name of Factory	Duration of season			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	124	137	163	82
3.	Bobbili	149	142	146	109
4.	Tuni	..	..	100	99
5.	Chagallu	..	..	141	111
6.	Challapalli	81	114	142	104
7.	Samalkot	170	187	154	133
8.	Chelluru	73	145	113	74
9.	Chittoor	..	..	..	93
10.	Chodavaram	..	..	..	80
11.	Palakol	..	..	—	10
12.	Etikoppaka	157	150	134	109
13.	Pithapuram	154	188	127	67
14.	Amadalavalasa	..	..	21	67
15.	Tanuku	120	168	161	135
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	123	158	131	116

N.A.—Not Available.

Source—Factory Returns.

TABLE IV-Bii

Time Account (Time loss)

Sl. No.	Name of Factory	Time lost per cent available			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	NA.
2.	Seethanagaram	16·00	23·29	26·96	22·47
3.	Bobbili	17·80	16·10	18·40	24·.20
4.	Tuni	..	..	32·62	36·11
5.	Chagallu	..	..	23·45	15·49
6.	Challapalli	32·06	21·27	25·45	21·83
7.	Samalkot	14·42	11·75	11·59	10·83
8.	Chelluru	55·96	22·88	18·14	16·28
9.	Chittoor	..	..	..	51·48
10.	Chodavaram	..	..	..	56·41
11.	Palakol	..	..	..	76·24
12.	Etikoppaka	24·15	17·42	23·63	21·18
13.	Pithapuram	18·57	16·93	17·40	25·25
14.	Amadalavalasa	..	..	53·67	46·15
15.	Tanuku	22·48	22·24	21·10	20·72
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	4·46	5·00	2·79	4·60

N.A.—Not Available.

Source—Factory Returns.

TABLE IV—C_i

Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent Cane			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	9·23	9·25	9·51	9·69
3.	Bobbili	9·63	9·77	10·24	10·29
4.	Tuni	..	..	8·89	8·89
5.	Chagallu	..	..	10·64	11·15
6.	Challapalli	9·60	9·44	9·66	10·72
7.	Samalkot	9·49	8·98	10·39	10·76
8.	Chelluru	8·21	8·83	10·05	9·65
9.	Chittoor	..	..	..	11·33
10.	Chodavaram	..	..	..	9·28
11.	Palakol	..	..	..	7·09
12.	Etikoppaka	9·80	8·81	10·30	9·59
13.	Pithapuram	9·21	8·40	10·02	10·09
14.	Amadalavalasa	..	..	7·79	9·40
15.	Tanuku	10·29	10·19	9·94	9·92
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	9·56	8·97	10·03	10·45

N.A.—Not Available.
Source—Factory Returns.

TABLE IV-C_{ii}

Technical Efficiency (total losses)

Sl. No.	Name of Factory	Total losses per cent Cane			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	2·49	2·28	2·28	2·29
3.	Bobbili	2·41	2·42	2·36	2·32
4.	Tuni	..	..	3·00	2·62
5.	Chagallu	..	..	2·95	2·15
6.	Challapalli	2·57	2·67	2·92	2·37
7.	Samalkot	2·62	2·81	2·51	2·41
8.	Chelluru	3·71	3·37	2·38	2·31
9.	Chittoor	..	..	..	3·75
10.	Chodavaram	..	..	..	2·43
11.	Palakol	..	..	..	1·93
12.	Etikoppaka	2·56	2·76	2·73	2·56
13.	Pithapuram	2·57	3·01	2·74	2·86
14.	Amadalavalasa	..	..	3·76	2·61
15.	Tanuku	2·32	2·46	2·65	2·59
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	2·34	2·33	2·25	2·23

N.A.—Not Available.
Source—Factory Returns.

सत्यमेव जयते

TABLE IV-Ciii

Technical Efficiency (reduced overall extraction)

Sl. No.	Name of Factory	Reduced overall extraction			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	86·64	83·94	82·29	84·09
3.	Bobbili	83·80	83·47	83·98	85·00
4.	Tuni	..	..	80·32	77·96
5.	Chagallu	..	..	81·95	85·49
6.	Challapalli	83·58	84·28	82·15	84·61
7.	Samalkot	82·49	82·66	82·96	82·63
8.	Chelluru	73·27	83·44	84·59	84·21
9.	Chittoor	..	..	..	82·99
10.	Chodavaram	..	..	..	83·87
11.	Palakol	..	..	..	83·52
12.	Etikoppaka	83·13	81·41	82·28	80·52
13.	Pithapuram	81·41	81·78	81·68	81·80
14.	Amadalavalasa	..	..	N.A.	83·22
15.	Tanuku	83·49	83·16	81·18	82·05
16.	Shakaranagar I	N.A.	N.A.	N.A.	N.A.
17.	Siakarnagar II				
18.	Vuyyuru	84·05	84·97	83·48	84·72

N.A.—Not Available.

Source—Factory Returns.

TABLE IV-Div

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed per cent cane (in terms of Bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	33·31	34·08	33·48	33·60
3.	Bobbili	31·46	31·16	30·70	31·57
4.	Tuni	..	..	45·56	36·35
5.	Chagallu	..	..	30·60	26·90
6.	Challapalli	26·60	26·00	26·00	26·00
7.	Samalkot	30·20	30·85	29·22	27·97
8.	Chelluru	41·00	32·22	31·22	30·35
9.	Chittoor	..	..	..	53·75
10.	Chodavaram	..	..	..	41·69
11.	Palakol	..	..	..	N.A.
12.	Etikoppaka	30·60	27·97	36·63	34·49
13.	Pithapuram	31·48	31·21	35·25	36·90
14.	Amadalavalasa	..	..	48·73	35·85
15.	Tanuku	33·28	33·69	32·85	32·59
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	27·62	28·65	28·99	28·92

N.A.—Not available.

Source—Factory Returns.

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed per cent cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	1·31	2·10	1·10	1·17
3.	Bobbili	0·44	0·40	0·38	1·38
4.	Tuni	..	..	16·84	13·08
5.	Chagallu	..	..	2·08	1·20
6.	Challapali	Nil	Nil	Nil	Nil
7.	Samalkot	1·32	0·60	0·80	0·17
8.	Chelluru	13·51	2·52	0·95	0·56
9.	Chittoor	..	..	..	24·83
10.	Chodavaram	..	..	..	14·55
11.	Palakol	..	..	..	N.A.
12.	Etikoppaka	6·40	4·11	11·88	8·04
13.	Pithapuram	3·80	2·92	3·86	6·06
14.	Amadalavalasa	..	..	16·44	4·36
15.	Tanuku	3·70	2·84	1·74	2·59
16.	Shakarnagar I	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II				
18.	Vuyyuru	0·31	0·31	0·20	0·42

N.A.—Not Available.
Source—Factory Returns.

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of Factory	Capacity (tonnes/day)	Specifications of existing milling tandem	Expansion license already granted (tonnes)	Expansion as asked for by the factories (tonnes)	Financial requirement as submitted by the factory (Rs. lacs.)
1.	Anakapalle	305	14/16″×24″ 17/16″×30″	1,200	..	..
2.	Seethanagaram	305	12/25″×42″	600	1,000	20·96
3.	Bobbili	457	12/26″×48″	850	1,000	6·74
4.	Tuni	508	N.A.	..	1,000	50·00
5.	Chagallu	813	12/25″×48″	1,250	..	..
6.	Challapalli	813	12/25″×48″	1,250	2,500	—
7.	Samalkot	813	9/27″×54″	1,000	..	—
8.	Chelluru	1,016	12/28″×56″	..	1,200	..
9.	Chittoor	1,016	12/28″×56″	1,600	2,000	55·00
10.	Chodavaram	1,016	12/28″×56″	..	2,000	..
11.	Palakol	1,016	12/28″×56″	—	..	—
12.	Etikoppaka	1,016	18/24″×48″	..	2,000	..
13.	Pithapuram	1,016	14/24″×48″	1,300	1,300	25·0
14.	Amadalavalasa	1,219	12/28″×56″	1,600	2,000	59·37
15.	Tanuku	1,270	18/26″×48″	..	..	85·00
16.	Shakarnagar I	4,572	18/30″×60″ 18/38″×78″	..	..	..
17.	Shakarnagar II					
18.	Vuyyuru	2,540	18/30″×60″ 12/24″×48″	..	5,000	..

Source—Factory Returns.

TABLE VI-A

Existing Strength of Labour, Labour Considered Surplus now and After Expansion/Modernisation

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Total labour employed	Labour surplus now		Labour surplus after expansion/ modernisation	
				Skilled & semiskilled	Unskilled	Skilled & semiskilled	Unskilled
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	589	Nil	Nil	Nil	Nil
3.	Bobbili	457	690	Nil	Nil	Nil	Nil
4.	Tuni	508	152	Nil	Nil	Nil	Nil
5.	Chagallu	813	374	Nil	Nil	Nil	Nil
6.	Challapalli	813	427	Nil	Nil	Nil	Nil
7.	Samalkot	813	677	Nil	Nil	Nil	Nil
8.	Chelluru	1,016	293	Nil	Nil	Nil	Nil
9.	Chittoor	1,016	393	Nil	Nil	Nil	Nil
10.	Chodavaram	1,016	N.A.	N.A.	N.A.	N.A.	N.A.
11.	Palakol	1,016	363	Nil	Nil	Nil	Nil
12.	Etikoppaka	1,016	667	Nil	21	Nil	21
13.	Pithapuram	1,016	791	25	25	25	25
14.	Amadalavalasa	1,219	305	Nil	Nil	Nil	Nil
15.	Tanuku	1,270	N.A.	N.A.	N.A.	N.A.	N.A.
16. 17.	Shakarnagar I Shakarnagar II	4,572	N.A.	N.A.	N.A.	N.A.	N.A.
18.	Vuyyuru	2,540	897	Nil	Nil	Nil	Nil
			6,618	25	46	25	46

N.A.—Not Available.
Source—Factory Returns.

TABLE VI-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Man days/tonne of sugar			
			1959-60	1960-61	1961-62	1962-63
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	15·6	16·8	15·8	14·6
3.	Bobbili	457	12·3	11·6	10·6	11·2
4.	Tuni	508	..	..	11·1	8·7
5.	Chagallu	813	..	..	7·2	6·0
6.	Challapalli	813	9·2	6·0	5·7	5·4
7.	Samalkot	813	10·1	9·0	8·9	7·7
8.	Chelluru	1,016	11·1	4·2	3·2	3·9
9.	Chittoor	1,016	..	..	..	96·1
10.	Chodavaram	1,016	..	..	..	..
11.	Palakol	1,016	..	..	..	34·9
12.	Etikoppaka	1,016	12·3	12·9	9·6	8·7
13.	Pithapuram	1,016	11·0	12·5	9·5	11·8
14.	Amadalavalasa	1,219	..	..	9·9	6·0
15.	Tanuku	1,270	..	..	..	..
16. 17.	Shakarnagar I Shakarnagar II	4,572	..	..	..	..
18.	Vuyyuru	2,540	4·9	4·7	4·0	4·0

N.A.—Not Available.
Source—Factory Returns.

TABLE VII-A

Utilisation of By-Products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (average of 5 seasons)			
			Production ('000 tonnes)	Used as fuel ('000 tonnes)	Saved & sold (tonnes)	Value realised Rs.
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	15·78	15·78	Nil	Nil
3.	Bobbili	457	25·01	23·50	1,505	N.A.
4.	Tuni	508	4·47	4·47	Nil	Nil
5.	Chagallu	813	17·56	17·56	Nil	Nil
6.	Challapalli	813	21·88	18·25	3,626	N.A.
7.	Samalkot	813	33·79	33·67	120	N.A.
8.	Chelluru	1,016	19·79	19·79	Nil	Nil
9.	Chittoor	1,016	9·70 (1st season)	9·70	Nil	Nil
10.	Chodavaram	1,016	7·48 (1st season)	7·48	Nil	Nil
11.	Palakol	1,016	0·44 (1st season)	0·44	Nil	Nil
12.	Etikoppaka	1,016	20·80	20·80	Nil	Nil
13.	Pithapuram	1,016	30·26	30·26	Nil	Nil
14.	Amadalavalasa	1,219	7·01	7·01	Nil	Nil
15.	Tanuku	1,270	42·98	42·98	Nil	Nil
16.	Shakarnagar I	4,572	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II		N.A.	N.A.	N.A.	N.A.
18.	Vuyyuru	2,540	76·50	76·50	Nil	Nil

N.A.—Not Available.
Source—Factory Returns.

सत्यमेव जयते

TABLE VII-B

Utilisation of By-Products (Molasses)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Molasses (average 5 seasons)			
			Production ('000 tonnes)	Utilised for distillery & trade (000 tonnes)	Surplus left (tonnes)	Value realised ('000 Rs.)
1	2	3	4	5	6	7
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	1·77	1·77	Nil	25·89
3.	Bobbili	457	3·07	1·62	1,450	27·16
4.	Tuni	508	0·76	0·76	Nil	N.A.
5.	Chagallu	813	2·49	2·49	Nil	35·26

TABLE VII-B—*contd.*

1	2	3	4	5	6	7
6.	Challapalli	813	3·04	3·04	Nil	N.A.
7.	Samalkot	813	4·83	3·14	1,690	75·86
8.	Chelluru	1,016	2·82	2·82	Nil	N.A.
9.	Chittoor	1,016	1·50 (1st season)	1·00	500	27·54
10.	Chodavaram	1,016	1·23 (1st season)	1·23	Nil	N.A.
11.	Palakol	1,016	0·06 (1st season)	0·06	Nil	N.A.
12.	Etikoppaka	1,016	3·86	3·44	415	93·26
13.	Pithapuram	1,016	4·80	N.A.	N.A.	136·15
14.	Amadalavalasa	1,219	1·14	1·14	Nil	N.A.
15.	Tanuku	1,270	5·44	4·07	1,370	N.A.
16.	Shakarnagar I	4,572	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II		N.A.	N.A.	N.A.	N.A.
18.	Vuyyuru	2,540	11·27	N.A.	N.A.	170·71

N.A.—Not Available.
Source—Factory Returns.

TABLE VII-C

Utilisation of By-Products (Press mud)

Sl. No.	Name of factory	Capacity (tonnes/ day)	Press mud (average of 5 seasons)			
			Production ('000 tonnes)	Sold or utilised as manure ('000 tonnes)	Surplus left (tonnes)	Value realised Rs.
1.	Anakapalle	305	N.A.	N.A.	N.A.	N.A.
2.	Seethanagaram	305	0·80	0·80	Nil	140
3.	Bobbili	457	1·44	1·44	Nil	1,320
4.	Tuni	508	0·34	0·34	Nil	Nil
5.	Chagallu	813	2·20	2·20	Nil	Nil
6.	Challapalli	813	2·45	2·45	Nil	N.A.
7.	Samalkot	813	2·24	2·24	Nil	6,450
8.	Chelluru	1,016	2·36	2·36	Nil	N.A.
9.	Chittoor	1,016	0·67 (1st season)	0·67	Nil	335
10.	Chodavaram	1,016	0·84 (1st season)	0·84	Nil	N.A.
11.	Palakol	1,016	0·02 (1st season)	0·02	Nil	N.A.
12.	Etikoppaka	1,016	2·05	N.A.	N.A.	3,750
13.	Pithapuram	1,016	2·41	2·41	Nil	1,980
14.	Amadalavalasa	1,219	0·50	0·50	Nil	N.A.
15.	Tanuku	1,270	4·28	4·28	Nil	2,800
16.	Shakarnagar I	4,572	N.A.	N.A.	N.A.	N.A.
17.	Shakarnagar II		N.A.	N.A.	N.A.	N.A.
18.	Vuyyuru	2,540	8·70	5·77	2,930	49,200

N.A.—Not Available.
Source—Factory Returns.

सत्यमेव जयते

TABLE VIII-A

Profits After Tax or Loss of the Factories During the Ten Years Ended 1961-62

(In lacs of Rs.)

Sl. No.	Name of factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. 2.	Seethanagaram Bobbili	4·09	2·70	2·58	4·91	2·48	3·88	5·11	7·26	2·25	2·59	37·85	3·78
3.	Challapalli	..	..	..	..	..	..	0·56	0·67	1·44	4·57	7·24	1·81
4.	Chelluru	..	..	..	..	..	..	..	—8·89	—5·27	3·40	—10·76	—3·59
5.	Etikoppaka	0·70	1·09	0·71	4·57	5·77	4·04	N.A.	N.A.	N.A.	N.A.	16·88	2·81
6.	Pithapuram	—6·74	—3·19	2·11	3·08	4·03	2·22	0·34	3·28	0·54	0·15	5·82	0·58
7.	Tanuku	—0·55	—0·07	2·65	13·72	13·31	8·63	9·51	6·71	7·85	13·29	75·05	7·50
8.	Shakarnagar	16·37	24·14	21·91	14·03	23·82	43·32	21·06	46·68	35·70	15·08	262·11	26·21
9.	Vuyyuru	11·65	13·55	6·02	14·28	12·79	18·54	10·38	18·92	22·64	35·06	163·83	16·38
	AVERAGE	3·65	5·46	5·14	7·80	8·89	11·52	6·71	9·33	8·14	9·27		7·64

NOTE.— (*i*) Figures of Profit and Loss are not available in Balance Sheets in respect of the following:

(1) Tuni.
(2) Chittoor.
(3) Chodavaram.
(4) Palakol.
(5) Amadalavalasa.

(*ii*) Balance Sheets from Anakapalle Factory have not been received.

(*iii*) Separate data for Samalkot and Chagallu Factories have not been given in Balance Sheets.

(*iv*) Determination of income-tax on profits is a very elaborate process and it has not been possible for this Committee to assess the exact position. Fifty per cent of the gross profits has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII-B

Profitability of the Factories in Different Capacity Slads

(Amounts in lacs of Rs.)

Sl. No.	Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year	No. of years for which data available	Total profit or loss for the above period	Average profit or loss per year
1	2	3	4	5	6	7	8	9	10	11
	Factories with capacities up to 749 tonnes									
1.	Seethanagaram	5	16·76	3·35	5	21·09	4·22	10	37·85	3·78
2.	Bobbili .									
	No. of factories showing Profit .	2			2			2		
	Average Profit per year per factory .			1·67			2·11			1·89
	Factories with capacities between 750 tonnes and 999 tonnes									
1.	Challapalli . .				4	7·24	1·81	4	7·24	1·81
2.	Chelluru . .				3	—10·76	—3·59	3	—10·76	—3·59
	No. of factories showing Profit. .				1			1		
	No. of factories showing Loss .				1			1		
	Average Profit or Loss per year per factory . .						—0·50			—0·50

TABLE VIII-B—*contd.*

1	2	3	4	5	6	7	8	9	10	11
	Factories with capacities of 1,000 *tonnes and above.*									
1.	Etikoppake . .	5	12·84	2·57	1	4·04	4·04	6	16·88	2·81
2.	Pithapuram . .	5	—0·71	—0·14	5	6·53	1·31	10	5·82	0·58
3.	Tanuku . .	5	29·06	5·81	5	45·99	9·20	10	75·05	7·50
4.	Shakarnagar . .	5	100·27	20·05	5	161·84	32·37	10	262·11	26·21
5.	Vuyyuru . .	5	58·29	11·66	5	105·54	21·11	10	163·83	16·38
	No. of factories showing Profit .	4			5			5		
	No. of factories showing Loss .	1								
	Average Profit or Loss per year per factory . .			7·99			15·43			11·38

TABLE VIII-C

Dividends Paid on Ordinary Shares by the Factories Since 1952-53

(Per cent paid up Capital)

Sl. No.	Name of factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
1.	Seethanagaram	10·00	10·00	10·00	9·00	9·00	10·00	15·00	20·00	15·00	15·00
2.	Bobbili										
3.	Challapalli	..	..	..	..	..	..	..	..	5·00	5·00
4.	Chelluru	..	..	..	..	..	..	..	Nil	Nil	Nil
5.	Etikoppaka	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
6.	Pithapuram	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
7.	Tanuku	N.A.	N.A.	6·00	N.A.	12·50	15·00	20·00	20·00	16·00	16·00
8.	Shakranagar	12·00	12·00	12·00	12·00	12·00	12·00	21·60	23·00	23·00	23·00
9.	Vuyyuru	7·50	7·50	7·50	7·50	7·50	7·50	15·00	15·00	15·00	15·00

NOTE :— (1) N.A.—Not Available.

(2) The dividends from 1958-59 onwards are subject to income-tax.

(3) Directors Reports were not available in respect of following five factories :

(*a*) Tuni, (*b*) Chittoor, (*c*) Chodavaram, (*d*) Palakol, and (*e*) Amadalavalasa.

It has not, therefore, been possible to ascertain dividends declared by these factories.

MADRAS

1. GENERAL REDUCE ASPECTS

1.1 The Madras State consists of 13 districts and is situated between latitude 8·10° to 13·7° (N) and longitude 76° to 80·35° (E). The sugar factories are situated in seven districts, *viz.*, Chingleput, South Arcot, Tiruchirapalli, Madurai, North Arcot, Thanjavur and Coimbatore.

The annual rainfall in Madras State on an average is 930 mm. and the actual rainfall during 1962-63 had been 934·7 mm. Based on the rainfall there exist some well defined seasons of cropping as shown below:

1. Samba— August to January
2. Kar— June to October
3. Navarai— December to April

It is significant that agriculture in Madras is controlled more by natural weather conditions, than by any other factor and the agricultural practices have to adjust themselves very much to the variations of weather conditions, monsoon rains and availability of water in river systems, tanks and wells.

The Madras State soils can be classified into the following types:—

1. The red soil
2. The black soil
3. The coastal alluvium
4. The delta soil
5. The laterite soil
6. Mixed soil
7. Organic or forest soil

सत्यमेव जयते

The types 1, 3 and 5 are predominantly red, reddish or brown in colour while types 2 and 4 are dark coloured popularly termed as black. Red soil is found over a large area of the State and may be said to be the common type. It is distributed all over the State either in large stretches or in isolated pockets in the midst of black soil areas.

1.2 Density of population, agricultural and industrial employment and economic condition of people

The average density of population in Madras State is 259 per sq. kilometre. Percentage of workers to total population is 45·6, of agricultural workers to total workers 60·5, of industrial workers to total population 18·0 and of workers in sugar industry to the industrial workers 0·001. Per capita income for the year 1960-61 has been estimated at Rs. 334·09 at current prices.

There are about 300 industries in the State, chief of which is textiles. Sugar industry occupies a place next to textile and groundnut oil industries.

The sugar industry sustains about 20,000 cultivators and nearly 7,000 factory workers besides a large number of persons carrying on small trades in the vicinity of the factories. Assuming an average family of five persons the sugar industry in the State supports about 1·4 lac people. The sugar industry pays about Rs. 7 crores annually to the cane growers of the State and the Central and State Governments derive an income of about Rs. 380 lacs as Excise Duty and Rs. 70 lacs as cess respectively. Thus the sugar industry occupies an important position in the economy of the State.

1.3 Importance of sugarcane crop

Sugarcane has been grown in this State for long. This crop more than any other, withstands the hazards of weather and natural calamities. It is also one of the chief cash crops and occupies an important place in the agricultural economy of the State as is evident from the following:—

(*a*) return per acre from sugarcane............Rs. 300-400

(*b*) return per acre from other important crops—

Paddy	Rs. 250-400
Cotton (irrigated)	Rs. 300-400
Groundnut (irrigated)	Rs. 250-300

The area under cane in sugar factory zones of the State has increased in the last four years from about 32,000 acres in 1959-60 to 59,000 acres in 1962-63.

1.4 Establishment and growth of the sugar industry in Madras

The number of sugar factories working in the various years since 1953-54 was as follows:

Year	No. of working factories
1953-54	3
1955-56	4
1957-58	5
1959-60	6
1960-61	8
1961-62	8
1962-63	9

It will be seen from the above that number of factories steadily increased from 3 in the year 1953-54 to 9 in the year 1962-63. The number has gone on increasing from year to year by the installation of new factories and in the year 1962-63 there were 9 working sugar factories.

One more factory *viz.*, the Salem Co-operative Sugar Mills Ltd., Mohanur, District Salem (crushing capacity 1,016 tonnes per day) started working from 1963-64 season.

1.5 Distribution of sugar factories in Madras

The distribution of the 9 factories working at present in the various districts and their existing daily cane crushing capacities are as follows:

District-wise Distribution of Sugar Factories in Madras

Name of the District	Name of Factory	Existing daily cane crushing capacity in tonnes (1963-64 season)
1. Chingleput	Madurantakam	1,016
2. Coimbatore	Amravathi	914
3. Madurai	Pandiarajapuram	244
4. North Arcot	Ambur	813
5. South Arcot	Nellikuppam	2,235
6. Thanjavur	Vadapathimangalam	1,219
7. Tiruchirapalli	Pettaivayatalai	813
	Pugalur	1,016
	Lalgudi	1,270

सत्यमेव जयते

1.6 Organisational set up of the cane development and marketing department at the State reduce level and of the factories

Each factory has its own cane development staff for administration and development section of its cane department. Each consists of a sugarcane development officer assisted by cane development staff, the strength of which varies from factory to factory. At the State level there are 30 development units each with one agricultural demonstrator, one fieldman and four demonstration Maistries. The average sugarcane area in the development units is about 3,500 acres. There are four regional Cane Development Officers. A State Sugarcane Development Officer (of the rank of a Deputy Director of Agriculture) heads the entire department and is incharge of sugarcane development and extension work.

Sugarcane Development Scheme

The Sugarcane Development Scheme was started in the State in the year 1949 and has completed 15 years of useful service.

The development staff carries on the sugarcane extension work in the villages and renders technical advice on improved technique of cane cultivation with the ultimate object of increasing cane production by 10 lac tonnes at the end of the Third Five Year Plan. The cane growers are assisted in securing tractors and other implements for preparatory and after cultivation operations, pesticides and fungicides at 50 per cent concessional rates and intensive manuring scheme loans for the purchase of manures and fertilisers etc. The *ryots* are also helped in raising short crop sugarcane seed nurseries for the supply of pure healthy seed material and are granted financial assistance in the shape of nursery premium and transport subsidy.

The intensive propaganda carried on by the sugarcane extension staff is suitably supported by arranging demonstration and observation plots in the *ryots*' own fields. They are also educated on the appropriate measures to be taken against the various pests and diseases.

Developing a network of roads in the sugar factory areas to aid quick transport of cane to the factories after harvest, forms an important part of this scheme.

1.7 Sugarcane research

The Central Sugarcane Research Station at Cuddalore with sub-stations at Gudiyatham and Sirugamani carries out intensive research on the local problems of cane growers relating to the respective tracts *viz.*, selection of suitable varieties, fixing up of optimum cultural and manurial schedules and eliminating pests and diseases, with a view to stepping up the yield of cane and recovery of sugar. There are proposals for intensive development in three units of four thousand acres each in the factory areas but the areas are yet to be selected.

1.8 Amount of cess collected and spent on cane development activities

The amount of cane cess realised by the State Government and expenditure incurred therefrom on sugarcane research and development was as follows:

Year	Amount of cess collection (in lac Rs.)	Expenditure incurred (in lac Rs.)
1956-57	6·04	2·60
1957-58	8·64	2·45
1958-59	10·97	6·57
1959-60	17·30	12·03
1960-61	18·89	11·82
1961-62	10·46	9·44
1962-63	26·88	10·84

2. TECHNICAL ASPECTS

2.1 Area under sugarcane and yield per acre

Each sugar factory in Madras has been assigned to it a specified area from which it can draw its cane supplies, called the reserved area. Certain areas are reserved on temporary basis also. In addition to these, there are certain areas termed as "free areas", which are not reserved for the factories but the factories are allowed to draw cane from them. The position with respect to area under cane in the sugar factory zones is given in Table I-A and estimated yield per acre in Table I-B.

It will be seen from the figures given in these tables that (*i*) the area under cane in factory zones has increased considerably with the coming up of new factories. From 31·59 thousand acres for 5 factories in 1959-60 it has gone up to 58·66 thousand acres in 1962-63 for 9 factories. It has been fluctuating in almost all the factory zones except Pandiarajapuram and Nellikuppam and (*ii*) the yield per acre ranged between 25-32 tonnes for the whole State and 34-44 tonnes for development zones.

2.2 Cane supplies to sugar mills

The percentage of cane utilised for white sugar manufacture is given in Table I-C, the actual supplies made to sugar factories in Table I-D and the percentage of cane supplied at the gate, road and rail centres in Table I-E.

It will be seen from Table I-C that the supplies of cane to sugar mills in the State have generally varied from 60 per cent to 98 per cent of the total cane produced in their zones except in case of Ambur, Amravathi and Lalgudi factories. In case of Ambur and Amravathi factories the supplies have ranged between 23 and 35 per cent of the total production whereas in Lalgudi factory the supply was 41 per cent in the year 1962-63, this being the first season of the factory. In the year 1962-63, which was the year of high *gur* price, supplies of almost all the factories except Madurantakam and Nellikuppam were adversely affected. Table I-D will show that the total supplies to factories (6 factories in 1959-60, 8 factories in 1960-61 and 1961-62 and 9 factories in 1962-63) have varied from 906·09 thousand tonnes to 1451·07 thousand tonnes being the highest in the year 1960-61. The supplies were the lowest in 1962-63 due to reduction in acreage on account of 10 per cent cut imposed on production by the Government in view of the surplus sugar position then obtaining, reduction in yield in some factory areas and diversion of more cane for *gur* manufacture.

It will be seen from Table I-E that in case of all the factories cent per cent cane is supplied at the factory gate which is a happy position and ensures fresher supplies at minimum transport cost. The number of growers supplying cane to 9 factories is about 20,300.

2.3 Irrigation, application of manures and fertilizers and supply of cane seed

The existing position in the various factories in respect of irrigation and supply of seed is given in Tables II-A and II-B respectively. The requirements in respect of manures and fertilizers are fully met and there is no specific problem regarding their availability or distribution.

It will be seen from Table II-A that entire cane area of all the factories except Amravathi and Pandiarajapuram is irrigated. The factories have got some minor problems regarding irrigation, chief of which is the difficulty of summer irrigation. Requirements in respect of irrigation means for Pandiarajapuram and Vadapathimangalam factories are also given in this table. The cost involved in these may be estimated at about Rs. 60 lacs. (Requirements, if any, in case of other factories have not been communicated to the Committee).

Table-II-B shows the requirement of seed. It will be seen that for 9 factories, actual yearly requirement of seed is 1,20,900 tonnes. The amount of seed arranged by the cane development department or any other agency is 33,600 tonnes (for five factories for which data are available).

2.4 Means of communication

Table II-C shows the position with regard to means of communication at present available in respect of *pucca* roads. Further requirements in respect of *pucca* roads, bridges and culverts are also shown.

It will be seen that at present about 5,500 kms. roads exist in the factory areas. A considerable part of these roads are the main roads of the Highways department. Minimum additional requirement of the factory zones is 1,965 kms. This will cost Rs. 1080·75 lacs at Rs. 55,000 per km.

As regards bridges about 35 big bridges and 25 causeways will be required and if the cost is estimated on an average at Rs. 60,000 and Rs. 30,000 respectively, the total will be Rs. 28·5 lacs. Cost of 424 culverts at Rs.3000 each will come to Rs. 12·72 lacs. Thus the total estimated cost of all the works will be Rs. 1080·75 lacs +Rs. 28·50 lacs +Rs. 12·72 lacs= Rs. 1121·97 lacs or say Rs. 11·22 crores. The requirements have been worked out on the basis of demands communicated by the factories and information supplied by the State Cane Development Department.

सत्यमेव जयते

2.5 Duration of season, cane crushed, sugar made and average recovery

The position with respect to average duration of season, cane crushed. sagar produced and average recovery recorded by Madras factories during he preceding seven years is as follows:

Year	Average duration (22 hrs.)	Cane crushed (lac tonnes)	Sugar made (lac tonnes)	Average recovery % cane
1956-57	195	7·21	0·66	9·15
1957-58	165	7·93	0·69	8·72
1958-59	180	8·29	0·75	9·02
1959-60	171	9·21	0·85	9·19
1960-61	213	14·36	1·31	9·01
1961-62	171	12·40	1·16	9·38
1962-63	146	11·07	1·04*	9·38

(*Including raw sugar)

It will be seen that during the last seven years the average duration (22 hours) has varied from 146 days in 1962-63 to 213 days in 1960-61 which was also the year of maximum production of sugar, this being of the order of 1·31 lac tonnes. Maximum recovery has been 9·38 in the years 1961-62 and 1962-63.

2.6 Sugar reduce production

The position with regard to the number of working factories, their registered capacity, production of sugar in tonnes and sugar produced per 100 tonnes of registered capacity is shown below:

Year	No. of working factories	Total registered cane crushing capacity per day in tonnes	Production of sugar in tonnes	Production of sugar/100 tonnes registered capacity (tonnes)
1950-51	4	3,698	44,093	1,192·3
1951-52	3	3,292	42,478	1,290·3
1952-53	3	3,292	30,363	922·3
1953-54	3	3,292	28,035	851·6
1954-55	3	3,292	57,403	1,743·7
1955-56	4	4,511	54,745	1,213·6
1956-57	4	4,511	66,261	1,468·9
1957-58	5	5,527	69,156	1,251·2
1958-59	5	5,527	74,791	1,353·2
1959-60	6	6,441	84,600	1,313·5
1960-61	8	8,270	1,31,464	1,589·6
1961-62	9	8,677	1,16,261	1,339·9
1962-63	9	9,540	1,04,000*	1,090·1

*Including raw sugar.

The maximum production of sugar has been 1·31 lac tonnes in 1960-61. The maximum production per 100 tonnes of registered capacity can be taken as 1500-1700 tonnes.

The consumption of sugar in Madras State in 1962-63 was about 1·40 lac tonnes. The State is thus deficit by about 9000 tonnes.

2.7 The age of the factory plants, their capacities and present condition of equipment

The following table gives the age of the various plants and their capacities :

Name of Factory	Year of establishment	Age in 1963 (years)	Original capacities (tonnes/day)	Existing daily cane crushing capacity licensed in tonnes (1963-64 season)	Actual max. crushing rate/24 hrs. operation attained in 1961-62 or 1962-63 (tonnes)
Pandiarajapuram	1947	16	244	244	283
Ambur	1960	3	813	813	902
Pettaivaytalai . . .	1958	5	813	813	825
Madurantakam . . .	1960	3	1,016	1,016	904
Amravathi . . .	1959	4	914	914	843
Pugalur	1944	19	152	1,016	1,072
Vadapathimangalam . .	1955	8	1,219	1,219	1,102
Lalgudi	1962	1	1,270	1,270	847 (trial season)
Nellikuppam . . .	1930	33	864	2,235	2,218

It will be seen from the above that except Nellikuppam, Pugalur and Pandiarajapuram, all the factories are between one to eight years old. Nellikuppam is the oldest being 33 years, Pugalur 19 and Pandiarajapuram 16 years old.

There had not been much additions to the originally installed capacities as two-third of the factories came into existence only during the last eight years. These factories are of 800-1300 tonnes/day capacity. Expansions have taken place in case of older factories *viz.*, Nellikuppam and Pugalur. At present the distribution in the various capacity ranges is as follows:

Below 500 tonnes	1
800—1050 tonnes	5
1050—1300 tonnes	2
Above 2000 tonnes	1

Out of 9 factories, 6 have started crushing in 1955 or later and as such their layout etc. is quite satisfactory and these plants also possess modern features.

It will be seen from Table III-A that the milling plants of all the factories except Pandiarajapuram have got two sets of knives which are adequately powered, the mills of four factories are driven by steam turbines and of the remaining by steam engines, and the power in the turbines/engines is adequate in all the factories except Pandiarajapuram. All the plants except three have only 12 rollers.

Table III-B will show that all the factories except Pandiarajapuram are semi-electrified. Six factories have got boilers of 200 or above p.s.i.g. working pressure and three of 160-180 p.s.i.g. pressure. Fivef actories have got economisers and all except one have the superheaters.

As regards the equipment in the boiling house, Table III-C will show that all the factories except Pandiarajapuram have automatic weighing scales; six factories have got vertical type of juice heaters and the rest horizontal type; in five factories bled vapours are utilised for juice heating; no factory has got vapour line juice heater; sulphitation tanks in two-third of the factories are of batch type; filtration is of continuous type in all except two factories; 7 factories have quadruple effect evaporators, two of them having vapour cells also and two factories have quintuple; two factories still have coil pans to the extent of 30-34 per cent of their total pan capacity; all the factories except one have low grade crystallisers fitted with heat exchange elements and all but two have got high speed centrifugals.

2.8 Working results

The data with respect to (*i*) cane quality, (*ii*) time account, (*iii*) recovery and total losses and (*iv*) fuel consumption are given in Tables IV-Ai, ii, iii, IV-Bi, ii, IV-Ci, ii, iii and IV-Di, ii respectively.

(*i*) *Cane Quality.*—It will be seen from Tables IV-Ai, ii & iii that the average seasonal pol per cent cane in the last four years has varied from about 10·2 to 13·2 with primary juice purity variation from 78·4 to 84·0. Majority of factories have had generally pol per cent cane of the order of 11·0-12·0 and primary juice purity of 81 to 84. Factories which have recorded comparatively better cane quality are Pugalur, Ambur and Pandiarajapuram. In general the cane quality is poor.

Fibre per cent cane is around 13-14·5 though in some years and in some factories it has been around 11·9 and 15·6 per cent also.

(*ii*) *Time Account.*—Tables IV-Bi and ii show the time account. It will be seen that excluding the year 1962-63, the duration of season in all factories except Madurantakam, Amravathi and Vadapathimangalam has generally been above 200 days. It may be mentioned here that sugar factoriese in Madras have generally two seasons—main season from mid November to May end and special season from August to October.

The number of hours lost to total available are high in a number of factories. The normal time loss should not exceed 10—12 per cent but it will be seen that in some of the factories it is considerably above this figure. In case of new factories, the time loss appears to be more for one or two seasons due to initial teething troubles.

(*iii*) *Recovery and Total Losses.*—Tables IV-Ci & ii show the position of recovery and total losses. It will be seen that in the factories which have fairly good cane quality *viz.* Pugalur, Ambur and Pandiarajapuram, the average seasonal recovery in the former two factories has been generally about 10 per cent and more and in the latter it is generally about 9·2 and above. The rest of the factories have had recoveries of about 9 per cent and below.

Total losses in five factories ranged between 2·02 to 2·58 whereas in rest of the factories these have varied between 2·52 and 3·09. The factories which have recorded the lowest losses of the order of 2·02 to 2·35 are Pugalur and Vadapathimangalam. In the matter of reduced overall extraction Table IV-Ciii will show that the number of factories in the various efficiency groups are as follows :

Reduced overall extraction	No. of factories
Up to 82	1
82—84	5
Above 84	3

It will thus be seen that three factories have good efficiency, 5 factories have average or medium efficiency and one factory has poor overall efficiency.

The break up of the total losses shows that more than half the factories are losing more in molasses, the sugar loss in molasses per cent cane being of the order of 1·4 to 1·7. The losses are high on account of higher production of molasses which is about 4·5 per cent on cane and also high purity of exhaust molasses which is ranging between 33-34 in Pugalur and Lalgudi, 34—36 in Pandiarajapuram, Pettaivaytalai, Madurantakam, Ambur and Amravathi and 39-41 in Nellikuppam as against a normal value of 30-32 units easily obtainable in plants with reasonably modern equipment and good operating techniques.

Sugar loss in bagasse is also on high side *i.e.* ranging between 1·0 to 1·2 in Amravathi, Ambur and Madurantakam. In the rest of the factories, it is ranging between 0·6—0·99. The factories reporting higher loss under this head are the comparatively newer factories, having new milling units with adequate powering and the high loss may be due to faulty operation and opening of the mills etc.

(*iv*) *Fuel Consumption.*—Tables IV-Di and ii give the position with regard to fuel consumption. It may be seen that all the factories have consumed their entire production of bagasse and have used some extra fuel also. The total fuel consumption in terms of bagasse has varied from 26-29 in three factories, 28-33 in three factories and 33-36 in two factories.

The main reasons for the higher fuel consumption are that about half the factories are having no heat recovery systems with the boilers resulting in poor efficiencies in generation. On the consumption side also, only some factories have adopted heat economy measures in the boiling house.

Table V gives particulars of the existing daily cane crushing capacity of the factories, specifications of their existing milling tandem, expansion as asked for by the factories and as recommended by the State Cane Department in the light of possible cane potential. Financial requirements for expansion and/or modernisation as estimated by the factories are also given.

2.9 Labour strength and productivity

Table VI-A shows the labour strength actually employed in Madras factories, the labour considered surplus at present and the labour that would become surplus after modernisation.

It will be seen that there is practically no surplus labour in the factories at present and even after effecting modernisation only two factories would have surplus labour totalling to 374.

Table VI-B shows the productivity of each factory in terms of man days per tonne of sugar for four years. It will be seen that in Vadapathimangalam and Ambur productivity has been fairly good *viz.*, 5·7 to 8·6 man days per tonne of sugar produced. In Nellikuppam, Pugalur, Madurantakam, the productivity is reasonable *viz.*, 8·6—12·7. In the remaining three factories *viz.*, Pandiarajapuram, Pettaivaytalai and Amravathi, the productivity is somewhat lower being above 12·7.

2.10 Utilisation of by-products

सत्यमेव जयते

Tables VII-A, VII-B and VII-C show the position with respect to utilisation of by-products.

It will be seen that almost all factories are using their entire production as fuel and do not save any bagasse. At present even some extra fuel is also used by the factories but scope is there for saving the bagasse by adopting suitable means of steam and fuel economy.

Although most of the molasses is being utilised for the production of industrial alcohol and for trade purpose, some molasses appears to be surplus. It is learnt that a distillery of 2 million gallons/day capacity is coming up near Trichy and as such, all the molasses is likely to be consumed leaving no surplus.

The press mud is given to the cultivators for manurial purposes and almost all factories are getting back some return from it.

3. ECONOMIC ASPECTS

3.1 Financial set-up

The nature of ownership, the share capital, the reserves and net worth of the 9 sugar factories in Madras as given in their Balance Sheets for 1961-62 are as follows:-

(In lacs of Rupees)

Name of Unit	Paid up capital			Reserves	Total net worth
	Original	Bonus issues	Total		
(i) *Public Limited*					
1. Pandiarajapuram	20·00	..	20·00	12·94	32·94
2. Pettaivaytalai	60·00	..	60·00	13·17	73·17
3. Pugalur*	36·88	9·96	46·84	46·01	92·85
4. Vadapathimangalam	100·00	..	100·00	1·55	101·55
5. Lalgudi@	79·92	..	79·92	..	79·92
6. Nellikuppam**	177·02	..	177·02	278·90	455·92
TOTAL	473·82	9·96	483·78	352·57	836·35
(ii) *Co-operatives*					
1. Ambur	49·88	..	49·88	16·07	65·95
2. Madurantakam	47·90	..	47·90	0·75	48·65
3. Amravathi	41·87	..	41·87	..	41·87
TOTAL	139·65	..	139·65	16·82	156·47
GRAND TOTAL	613·47	9·96	623·43	369·39	992·82

*Combined figures for Pugalur and Samalkot (Andhra Pradesh).

@Factory under construction. It had a trial run in 1962-63.

**Combined figures for Nellikuppam sugar factory, distilleries, fertilisers & chemical works and subsidiary companies.

सत्यमेव जयते

It will be seen that out of the share capital of Rs. 6·23 crores, a sum of Rs. 0·1 crore has been subscribed as bonus share, the remaining amount of Rs. 6·13 crores being the originally paid-up capital. At the close of 1961-62, a sum of Rs. 3·70 crores was also available in reserves, bringing the value of total net worth to Rs. 9·93 crores. Thus the profits so far retained by the Madras industry in the form of bonus shares and reserves aggregate Rs. 3·80 crores which means an addition of 62·0 per cent to the initially paidup capital.

Financial analysis* has been made by the Committee for the years 1953-54; 1957-58 and 1961-62, on the basis of Balance Sheets received from sugar factories and the results are shown below:—

(In lacs of Rs.)

Particulars	1953-54	1957-58	1961-62	Comparative development	
				1957-58 over 1953-54	1961-62 over 1957-58
1. No. of units . . .	3	4†	9	1	5
2. Gross block . . .	304·65	593·19	1,617·85	288·54	1,024·66
3. Accumulated depreciation .	128·04	231·65	395·31	103·61	163·66
4. Net block	176·61	361·54	1,222·54	184·93	861·00
5. Net worth	253·70	480·40	992·82	226·70	512·42
6. Surplus of net worth over net block . . .	77·09	118·86	—229·72	41·77	—348·58
7. Debentures & long term loans	20·02	68·30	482·00	48·28	413·70
8. Available resources . .	97·11	187·16	252·28	90·05	65·12
9. Investment . . .	3·73	27·23	25·05	23·50	—2·18
10. Investment as % of surplus net worth . . .	4·8	22·9	..		
11. Net block as % of gross block	58·0	60·9	75·6		

†In addition, Pettaivaytalai factory went into production for a trial season during 1957-58 sugar year but that period was covered by its 1958-59 accounting year. Hence this factory has not been accounted for here.

It will be seen that at the close of 1961-62, net worth of the Madras sugar industry aggregated Rs. 9·93 crores. A sum of Rs. 4·82 crores was also obtained by the industry by way of debentures and long term loans thus augmenting its total resources to Rs.14·75 crores. Out of this a sum of Rs. 12·23 crores was possessed in fixed assets in the form of plant, machinery and buildings; Rs. 0·25 crore was invested in shares of other companies and in Government securities and the balance of Rs. 2·27 crores was used mostly as the working capital.

These figures are indicative of the development that has taken place during the last 8 years. It will be seen that there has been remarkable growth in the sugar industry in this part of the country. During the period of 4 years ending 1961-62, the industry has made a gross investment in fixed assets of the order of Rs. 10·25 crores as against of Rs. 2·89 crores in the preceding 4 years. The fixed assets stand depreciated to the extent of about 25 per cent of the value of the gross block only. The value of net block increased by Rs. 8·61 crores during the period of last 4 years as against which net worth increased by Rs. 5·12 crores only. The industry has also drawn upon additional long term borrowings to the extent of Rs. 4·14 crores during the last four years.

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*Similar to the analysis made by the Tariff Commission in paragraph 15·5 of their report on the cost structure of sugar (1959) for the year 1953-54 and 1957-58.

The foregoing analysis would show that on the whole there has been considerable efforts towards expansion of existing units and establishment of new unit in recent years in the Madras State.

3.2 **Profit and loss position.**

The profit and loss position as revealed from Balance Sheets of Madras factories for the last 10 years is given in Table VIII-A and it would generally indicate the financial position of the industry. It will be seen that on the whole there have been good profits each year, the average for 10 years being Rs. 9·26 lacs per year per factory after payment of income tax.

Table VIII-B is based on a study of profit or loss made by factories in various capacity slabs during the two periods of 5 years each *viz.*, 1952-53 to 1956-57 and 1957-58 to 1961-62 and also for the entire period of 1952-53 to 1961-62. This position is summarised below:

	1952-53 to 1956-57	1957-58 to 1961-62	1952-53 to 1961-62
(i) *Factories incurring losses*			
Number	1	..	..
Average loss per year per factory (lac Rs.) . .	10·70	..	..
(ii) *Factories making profits*			
Number	4*	7*	7*
Average profit per year per factory (lac Rs.) .	7·72	11·54	9·26
(iii) *Total*			
Number	5*	7*	7*
Average profit per year per factory (lac Rs.) .	6·05	11·54	9·26

सत्यमेव जयते

*Also includes Samalkot sugar factory of Andhra Pradesh, whose accounts are combined with Pugalur Factory.

Table VIII-C shows the dividends paid by Madras sugar factories since 1952-53. It will be seen that good profitability has enabled the three long established units of Pugalur, Nellikuppam and Pandiarajapuram to declare good dividends each year on the ordinary shares. The newly set up factories have not declared any dividends so that long term loans are first paid off by them. Pettaivaytalai factory, however, started declaring reasonable dividends from 1960-61 *i.e.* just two years after going into production.

4. Specific Problems of Sugar Factories

1. Pandiarajapuram

1. Diversion of cane to *gur* and *khandsari.*

2. Uneconomic crushing capacity of the factory.

2. Ambur

1. Huge diversion of cane for jaggery and *khandsari* production.

2. Want of metalled feeder roads and road over-bridges.

3. Pettaivaytalai

1. Closure of channels for a long period in months of need.

2. Lack of proper roads.

4. Madurantakam

1. The area is new to cane cultivation and profit in cane is not quite attractive at the present price for paddy. Margin in cane cultivation is not very attractive on account of somewhat low yields and unfavourable season.

2. Tank water is available for irrigation of crops for about 6 to 8 months. For the rest of the year cane crop is irrigated by wells. As the sub-soil water is scarce and there are not adequate number of wells, required irrigation is not given with the result that the yield is very much affected.

3. Resources on the part of members are lacking and hence sub-soil water in several parts of the area has not been tapped.

4. Restrictions on sinking of wells in the river basin area and use of electricity for the wells located in this area are serious handicaps.

5. Very bad condition of feeder roads.

6. Cane maturity period is limited to 70—80 days due to late rains till November. Present capacity does not permit the cane to be finished within this period.

5. Amravathi

1. Concentration of planting for June to September in factory area. The *ryots* in this part are accustomed to grow cane ripe for cutting in June to September period only. The cane planted from September to January usually flowers and the *ryots* feel that the yield per acre generally decreases during this period.

2. Large scale diversion of cane for jaggery making (45—63 per cent.)

3. Lack of communication facilities inhibits quick development of cane and effective supply to factory from the Amravathi Reservoir Project area and seven tanks area.

4. Non-supply of power to wells in this part is another impediment which comes in the way of large scale cultivation of cane. Water is let in the Amravathi Main Canal only for about 6 months. *Ryots* are prepared to take up sugarcane cultivation only when power is supplied to pump water from the wells.

5. Long distance cane (70 miles) resulting in high transport cost.

6. Pugalur

1. Bad condition of roads.

2. Heavy taxation on truck and lorry transport.

3. Temporary reservation of areas is a drawback for cane development.

7. Vadapathimangalam

1. Lack of summer irrigation and machinery for preparatory cultivation and additional operation.

2. Lack of natural drainage facilities.

3. Lack of good roads and transport vehicles.

4. The drainage channels to be maintained by the P.W.D. are not in good condition and as far as the factory farm is concerned there are about half a dozen major drains to be maintained.

5. The soil in this region being very heavy and labour being very scarce, preparatory cultivation and the cultural operations cannot be satisfactorily done unless track type tractors of 50 to 60 H.P. are made available with implements. Total requirement of factory farm and the farmer may be 24 such units.

8. Lalgudi

1. High price of jaggery and diversion of cane for the same.

2. Long distance transport.

3. Want of approach roads.

4. The closure of the channel at present is for a period of a month and above which affects standing crops and also prevents further plantation.

9. Nellikuppam

1. Non-availability of spare parts for tractors and trailers.

2. Inadequate credit facilities for the purchase of tractors and deep well pump sets.

3. High rate of taxes for tractors/trailers and lorries resulting in increased transport charges.

4. Non-availability of fertilizers in time.

5. Increased freight rate for sending cane in wagons.

6. Belated and/or non-supply of empty wagons for cane traffic.

7. With two factories—one at Pondicherry and another at Mandiyambakkam (coming up) very near to the factory, this factory is mostly dependent on road borne supplies and, therefore, roads leading to the factory need improvement.

8. In S. Arcot District, Neyveli deep well pumps are depleting the soil of its sub-soil water. Also Sadhnur Dam across Pamman river has stopped the flow of water.

9. Difficulties in acquiring the land for the extension of cane yard.

10. Two new factories, *viz.*, Mundiambakkam and Pennadam are coming up in their District and their cane area is being allotted to these factories without allotting any alternative area to them.

11. High hire charges and insufficient number of power drills.

12. Problem of labour likely to be rendered surplus on account of mechanisation of cane handling system.

5. RECOMMENDATIONS

A study of the foregoing chapters will show that the Madras State is situated in the tropical belt having climatic conditions which are favourable for cane cultivation. The sugarcane occupies a prominent place in the schemes of agricultural production and the sugar industry occupies a place next to textile and groundnut oil industries. The average sugarcane yield is 30 to 45 tonnes per acre but the cane quality in general is rather poor. The factory zones are almost fully saturated with irrigation except in two factories, *viz.*, Pandiarajapuram and Amravathi. The factories have only some problems relating to irrigation, which need the attention of the State Government.

Some of the areas near sugar factories have problems of drainage. This is acute near Vadapathimangalam. In many other areas, there is considerable scope for improving the quality of cane by providing efficient drainage systems. In some of the areas the nearness of the paddy fields which are flooded with water, present problems of controlling soil moisture in the cane fields for gettting the maturity and higher sugar content.

There is also no problem regarding availability or distribution of manures and fertilizers. Pests and diseases have also not been reported. The communications, however, are not adequate. There is also considerable scope for cane development.

As regards factory capacities, their plant and equipment and their performance, Nellikuppam is 33 years old, Pugalur is 19 years and Pandiarajapuram is 16 years old. The rest have been established fairly recently, *i.e.*, within the last 10 years. The older factories are, however, being fairly well maintained. Nevertheless, they lack some of the modern features of plant design and layout. Except for Nellikuppam, which has a capacity of over 2,000 tonnes and Pandiarajapuram which is below 300 tonnes, the rest come within the 800 to 1,300 tonnes per day capacity group.

The financial condition of almost all factories is quite satisfactory. The Committee, however, feels that the cost of production of sugar in the Madras State can be brought down considerably by paying attention to the following aspects:—

(*i*) Improvement in cane quality

(*ii*) Fulfilling the needs of communications

(*iii*) Expansion and modernisation of factories

(*iv*) Intensive development of cane areas

(*i*) The cane quality is the most important factor for the economic working of the sugar mills. The variation in pol per cent cane within the region being 10·23 to 13·22, there appears to be a considerabale scope for improving the quality of cane. Efforts will have to be concentrated to develop cane varieties with high sucrose content.

It appears that Nellikuppam and Pugalur factories have improved their cane quality appreciably by distributing bonus for better quality cane. The scheme of the Government of India on payment of cane price on quality basis has run at Pugalur for a number of years very successfully and the Committee feels that if this scheme were adopted by all the factories in the Madras State in a suitable form, they would be able to discover pockets of poor cane quality and apply remedial measures.

(*ii*) As regards communications the needs as estimated by the factories are 1965 kilometres of *pucca* roads, 35 big bridges, 25 causeways and 424 culverts. The total cost of making these may be estimated at Rs. 11·22 crores. The Committee recommends that the State Government should give utmost priority to the completion of their programmes in respect of the above.

(*iii*) All factories except one in the Madras State are below 1300 tonnes. They have reported that much more cane can be obtained for crushing in their factories and the Sugarcane Development Officer has corroborated this statement. The factories have, therefore, asked for expansion as given below:—

Name of Factory	Existing daily cane crushing capacity (tonnes) (1963-64 season)	Capacity upto which extension licence already granted (tonnes)	Expansion as asked for by the factories (tonnes)	Expansion recommended by the Committee (tonnes)
1. Pandiarajapuram	244	..	1,000	1,000
2. Ambur	813	1,250	1,300	1,250
3. Pettaivaytalai	813	1,000	1,000*	1,000
4. Madurantakam	1,016	..	1,200	1,200
5. Amravathi	914	..	1,300	1,300
6. Pugalur	1,016	1,500	1,500	1,500
7. Vadapathimangalam	1,219	..	..	..
8. Lalgudi	1,270	..	1,500	1,500
9. Nellikuppam	2,235	..	..	..
TOTAL	9,540			12,204

*Expansion going on; expected to be completed by the end of 1964.

The Committee recommends that the above expansion may be allowed so that the factories are enabled to bring down the cost of production of sugar still further. The Committee estimates that the expenditure towards rehabilitation, expansion and/or modernisation of these factories (6) would amount to Rs. 2·4 crores.

It may be stated here that one of the reasons why the economy of the sugar factories in the Madras State has been satisfactory, in spite of the poor quality of cane and the small capacities of its units is that they enjoyed freight advantage and had not to pay any purchase tax so far. The purchase tax has now been imposed recently and the freight advantage is fast disappearing. If the Madras factories have to stay economic with the disappearance of these advantages, the factories will have to think of expansion to the maximum capacity that the cane potential in their areas permits. The Committee would, therefore, favour such expansions in preference to new units within the economic transport distance of the existing units.

(*iv*) The Committee feels that there is considerable scope for increasing acre yields of sugarcane as well as improving the cane quality and recommends that to this end intensive development schemes in blocks of 2,000 to 4,000 acres on the lines of Uttar Pradesh be introduced in all the factory zones of Madras State.

It was pointed out to the Committee that sufficient and necessary co-ordination between the various State agencies responsible for cane development did not exist. As the Committee considers that co-ordinated effort is an essential prerequisite towards any attempt at cane development, there should be a High Power Board or Committee of the State to consider the problems of the sugar industry in the State and to implement the scheme of development with the Sugarcane Development Officer as the Secretary,

During the course of discussions representatives of sugar factories put forward the following difficulties or suggestions:—

(1) The existing factories should be consulted in fixing the location of new factories in proximity of their areas.

(2) The areas which are reserved on temporary basis should be made permanent.

(3) Encroachment upon the developed area of a factory is a disincentive and should be seriously viewed.

(4) Establishment of *khandsari* units in factory area should be discouraged and if any such unit is going to be located, it should be decided in consultation with the factory in the area.

(5) Jaggery manufacture should be banned in the reserved areas of the factories.

(6) There is difficulty in the cane development on account of the Palhar Basin rules of the State Government, which prohibit sinking of tubewells in areas adjoining to the basin. These should be modified. Use of electricity should also be permitted for baling out water from the wells located in the river basin area.

(7) The problem of irrigation in the summer months becomes very acute, because the period of closure of channels for annual cleaning is about 45 days which is too long and should be brought down to a maximum of fifteen days. The following suggestions were also put forward in this regard:—

(*a*) Closure works at canals should be arranged to be done within 2 or 3 weeks towards the end of June in order to ensure continuous supply from February to May.

(*b*) The river sluices in the cane area should also be remodelled to ensure efficient utilisation of water even when the supply is low.

(*c*) In order to ensure adequate summer irrigation, it is necessary for the factory as well as the *ryots* to put up filter points and tubewells and equip them with oil engines and pump sets. The investment in the filter point and the oil engine and pump set would come to about Rs. 4,000 per unit. It would help the factories and *ryots* to stabilise the crop during the summer if subsidy is given for putting up bore-wells and filter points and a medium term loan is also given at the rate of Rs. 3,500 per unit of oil engine and pump set. The loan may be given on a nominal rate of interest repayable over a period of ten years.

(*d*) It is of utmost importance that power is supplied to the wells as quickly as possible because during the closure period of canal the *ryots* have to bale water from their wells.

(8) In the areas where there are no canals, subsidy for minor irrigation projects should be given to the growers.

(9) In South Arcot District, Neyveli deep well pumps are depleting the soil of its sub-soil water. Also Sadhnur dam across Pamman river has stopped the flow of water. This river should be flooded to replenish the sub-soil water. Also power drills should be made available to growers at subsidised rates or on long term interest free loans and deep well pumps should be installed.

(10) On account of want of resources on the part of members, the sub-soil water in several parts of the Madurantakam factory area has not been tapped. If credit facilities are offered to the member-growers, the irrigation can be improved. The credit should be routed through the factory so that the recovery will be easy apart from having strict control on the members to insist on cane being planted under the wells sunk with the credit offered.

(11) Under the present system, the Panchayat Boards are to deepen and widen the drainages for satisfactory drainage but work by this agency is not carried out satisfactorily. Therefore, the P.W.D. themselves should incur the necessary expenditure and carry out these important works.

(12) There should be a definite relationship between the cess collected from a certain factory and the cess utilised for the development of that factory's area.

(13) In addition to cess there is another levy on cane *viz.*, sales tax at the point of purchase at the rate of 3 per cent of cane price which should be reimbursed to the factory on the quantity of sugar that is exported as is done in other States.

(14) Improved credit facilities should be given to the growers for the purchase of tractors, motor pump-sets and deep well pumps.

(15) Liberal tax concessions for cane traffic should be given to induce the growers to send their cane in lorries and trailers in preference to slow moving vehicles as the hire rates for these vehicles are comparatively high.

(16) For the purchase of A.D.V. carts, wheel type tractors, trailers and lorries, loans should be given at nominal rates of interest to the factories and private *ryots* repayable over a period of five years.

(17) More tyre carts should be supplied to the growers and subsidy should be given by the Government on them.

(18) Government should increase the present rate of subsidy on seed materials by at least 25 per cent to give incentive to *ryots* to grow their nurseries which will go a long way in the production of healthy, vigorous and higher yielding cane or Government should themselves develop the nurseries at isolated places and supply healthy seed at concessional rate.

(19) A variety which is suitable for planting in the area of Amravathi factory from October to January should be developed and popularised. Suitable incentives by way of subsidy for cane setts etc. is necessary to develop cane in this factory area for the main season.

(20) Molasses should be used as a cattle feed and Agriculture Department should carry out its propaganda in this direction. Calcium sulphate can be separated out from the molasses and the molasses can be mixed up with the pith of bagasse and used as cattle feed.

(21) Government should not license new units and instead prefer to increase the capacity of the existing units to make them economic.

(22) Licensing authority looked only to existing areas for deciding further licensing of capacity. They should consider also the potential areas because potential areas would not be converted into actual areas under cane unless disposal of cane was assured.

(23) Government should announce their policy regarding cane price well in advance and also in respect of the sugar to be produced by each factory so that factories may decide their planting programmes sufficiently early.

(24) Accounting year for the sugar factories should be made from 1st July to 30th June instead of 1st November to 31st October.

(25) Foreign exchange should be allocated for getting the spare parts of the tractors already being used by the factories and also for purchase of new tractors and other agricultural implements. Certain portion of the foreign exchange earned by the sugar may be allowed for the sugar industry *en block*.

(26) It is imperative that the present freight rates are revised for short distance traffic to make rail transport competitive to *ryots*.

The Committee considers that all the above suggestions are reasonable and deserve examination. Nos. 1 to 20 are for the consideration of the State Government and points Nos. 21 to 26 for the consideration of the Government of India.

Financial implications

The total cost of rehabilitation, modernisation and expansion of Madras factories comes to Rs. 2·4 crores, on improvement of communications to Rs. 11·22 crores and that on irrigational facilities to Rs. 0·60 crores.

TABLE I-A

Area Under Cane

Sl. No.	Name of Factory	Capacity (tonnes per day)	Area under cane (000 acres) 1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	244	3·89	3·89	3·89	3·89
2.	Ambur	813	..	20·00	18·00	16·00
3.	Pettaivaytalai	813	5·15	6·18	6·57	3·69
4.	Madurantakam	1,016	..	2·90	4·30	3·18
5.	Amravathi	914	N.A.	N.A.	N.A.	6·00
6.	Pugalur	1,016	5·99	8·03	6·03	6·00
7.	Vadapathimangalam	1,219	5·56	5·80	5·00	5·70
8.	Lalgudi	1,270	..	..	..	3·20
9.	Nellikuppam	2,235	11·00	11·00	11·00	11·00
			31·59	57·80	54·79	58·66

N.A.—Not Available.

Source.— Office of the State Sugarcane Development Officer & Factory Returns.

TABLE I-B

Estimated Yield of Cane per Acre

Sl. No.	Particulars	Yield per acre (tonnes) 1959-60	1960-61	1961-62	1962-63
1.	In whole State	24·96	31·48	31·20	31·80
2.	In Development Zones	43·12	44·23	40·87	34·28

Source—Indian Central Sugarcane Committee.

TABLE I-C

Utilisation of Cane Crop for White Sugar

Sl. No.	Name of Factory	White sugar 1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	68·0	68·0	63·0	60·0
2.	Ambur	—	23·0	26·0	24·0
3.	Pettaivaytalai	89·0	89·0	89·0	86·0
4.	Madurantakam	—	90·0	90·0	90·0
5.	Amravathi	N.A.	30·0	35·0	25·0
6.	Pugalur	89·4	83·9	82·2	N.A.
7.	Vadapathimangalam	67·0	65·0	63·0	60·0
8.	Lalgudi	—	—	—	41·0
9.	Nellikuppam	97·0	92·0	96·0	98·0

N.A.—Not Available.

Source : Factory Returns.

TABLE I-D

Cane Supplies Made to the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Actual supplies made to the factories (000 tonnes)			
			1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	244	52·41	79·35	63·48	52·30
2.	Ambur	813	—	142·00	131·00	97·00
3.	Pettaivaytalai . . .	813	115·65	205·39	209·04	117·98
4.	Madurantakam . . .	1,016	—	90·00	90·26	74·17
5.	Amravathi	914	72·24	126·00	160·00	37·50
6.	Pugalur	1,016	189·00	261·00	165·00	139·13
7.	Vadapathimangalam . .	1,219	126·79	155·33	141·47	98·98
8.	Lalgudi	1,270	—	—	—	33·68
9.	Nellikuppam . . .	2,235	350·00	392·00	383·00	332·60
	Total .		906·09	1,451·07	1,343·25	983·34

Source—Factory Returns.

TABLE I-E

Percentage of Gate, Road and Rail Cane and Number of Growers

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Per cent gate cane	Per cent road cane	Per cent rail cane	No. of growers supplying cane to the factory
1.	Pandiarajapuram . . .	244	100·0	—	—	1,200
2.	Ambur	813	100·0	—	—	3,430
3.	Pettaivaytalai . . .	813	100·0	—	—	3,170
4.	Madurantakam . . .	1,016	100·0	—	—	2,000
5.	Amravathi	914	100·0	—	—	1,530
6.	Pugalur	1,016	100·0	—	—	3,589
7.	Vadapathimangalam . .	1,219	100·0	—	—	400
8.	Lalgudi	1,270	100·0	—	—	953
9.	Nellikuppam . . .	2,235	100·0	—	—	4,022
						20,294

Source—Factory Returns.

TABLE II-A

Irrigation

Sl. No.	Name of Factory	Existing position regarding irrigation	Problems and requirements in respect of irrigation
(1)	(2)	(3)	(4)
1.	Pandiarajapuram	About 45% of the culturable area is irrigated.	*Requirements* :—10 State tube wells, 300 wells and 400 pumping sets.
2.	Ambur	Entire cane area is irrigated.	—
3.	Pettaivaytalai	Entire cane area is irrigated.	Closure of channels for a long period in summer months.
4.	Madurantakam	Entire cane area is irrigated.	(*i*) Sub-soil water is scarce. (*ii*) Restriction on sinking of wells in the river basin area and also on the use of electricity for the wells located in this area.
5.	Amravathi	47% of the cane area is irrigated.	Non-supply of power to wells.
6.	Pugalur	Entire cane area is irrigated.	—
7.	Vadapathimangalam	Entire cane area is irrigated.	Lack of summer irrigation. *Requirements*:—400 filter points and bore wells.
8.	Lalgudi	Entire cane area is irrigated.	Period of closure of channels for annual cleaning is too long.
9.	Nellikuppam	Entire cane area is irrigated.	(*i*) Neyveli deep well pumps are depleting the soil of its sub-soil water. (*ii*) Sadhnur dam across Pamman river has stopped the flow of water. *Requirements* :—(*i*) Reconstruction & deepening of canal. (*ii*) Power drills for hire. (*iii*) Deep well pumps required.

Source.—Office of the State Sugarcane Development Officer and Factory Returns.

TABLE II-B

Cane Seed

Sl. No.	Name of Factory	Area under cane acres	Amount of seed requirement (yearly) (tonnes)	Amount of seed proposed to be distributed by Development Deptt. & any other agency (yearly) (tonnes)	Balance requirement
1.	Pandiarajapuram	3,900	5,850	2,100	3,750
2.	Ambur	20,000	30,000	N.A.	N.A.
3.	Pettaivaytalai	6,600	9,900	7,500	2,400
4.	Madurantakam	4,300	6,450	N.A.	N.A.
5.	Amravathi	6,000	9,000	4,500	4,500
6.	Pugalur	8,000	12,000	N.A.	N.A.
7.	Vadapathimangalam	5,800	8,700	N.A.	N.A.
8.	Lalgudi	6,000	9,000	9,000	—
9.	Nellikuppam	11,000	16,500	10,500	6,000
	Total	80,600	1,20,900	33,600 (for 5 fys).	

Source.—Office of the State Cane Development Officer.

TABLE II-C

Means of Communication

Sl. No.	Name of Factory	Existing *pucca* roads in factory zone (Kms.)	Requirements		
			Pucca roads (Kms.)	No. of bridges	No. of culverts
1.	Pandiarajapuram	15	44	—	10
2.	Ambur	240	150	1 Bridge 9 Causeways	21
3.	Pettaivaytalai	200	240	10 Causeways	150
4.	Madurantakam	1,600	320	25 Bridges 6 Causeways	200
5.	Amravathi	500	500	5	10
6.	Pugalur	700	500	1	20
7.	Vadapathimangalam	N.A.	80	N.A.	N.A.
8.	Lalgudi	320	31	1	6
9.	Nellikuppam	1,900	100	2	7
	Total	5,475	1,965	35 Bridges 25 Causeways	424

Source.—Office of the State Sugarcane Development Officer and Factory Returns.

TABLE III-A

Milling Plants

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Cane knives Total H.P. & No. of sets	Milling tandem	Mill drive	
					Type	Total H.P.
1.	Pandiarajapuram	244	25(1)	17/16″×30″	E	60
2.	Ambur	813	250(2)	12/25″×47″	T	500
3.	Pettaivaytalai	813	220(2)	12/27″×54″	T	600
4.	Madurantakam	1,016	300(2)	12/28″×56″	E	700
5.	Amravathi	914	250(2)	12/25″×48″	T	500
6.	Pugalur	1,016	250(2)	15/30″×60″	E	500
7.	Vadapathimangalam	1,219	375(2)	12/30″×60″	E	800
8.	Lalgudi	1,270	350(2)	12/28″×56″	T	1,000
9.	Nellikuppam	2,235	450(2)	18/35″×78″	E	2,238

E—Steam Engine.
T—Steam Turbine.
Source.—Factory Returns.

TABLE III-B

Power and Steam Generating Plants

सत्यमेव जयते

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Power generating units Total K.W.	Boiler No. /H.S./Pressure sq. ft./(p. s. i.)	H.S. per cent boiler H.S.	
					Economizer	Super heater
1.	Pandiarajapuram	244	40	2/2162/180	48	Nil
2.	Ambur	813	850	3/15000/294	32	28
3.	Pettaivaytalai	813	940	2/15000/200	Nil	5
4.	Madurantakam	1,016	850	3/15000/228	19	5
5.	Amravathi	814	800	3/15000/275	E	13
6.	Pugalur	1,016	1,000	4/15600/160	Nil	E
7.	Vadapathimangalam	1,219	1,400	3/N.A. /285	E	E
8.	Lalgudi	1,270	1,250	2/14000/200	Nil	5
9.	Nellikuppam	2,235	2,000	6/39170/160	Nil	E

N.A.—Not Available.
E—Exists but H.S. not mentioned.
Source.—Factory Returns.

TABLE III-Ci

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Juice weighing	Juice heaters: Total H.S. (sq. ft.)	Juice heaters: Vertical or horizontal	Juice heaters: Vapour line juice heater H.S. (sq. ft.)
1.	Pandiarajapuram	244	M	950	V	Nil
2.	Ambur	813	A	2,000	V	Nil
3.	Pettaivaytalai	813	A	3,295	H	Nil
4.	Madurantakam	1,016	A	2,400	V	Nil
5.	Amravathi	914	A	2,000	V	Nil
6.	Pugalur	1,016	A	3,540	H	Nil
7.	Vadapathimangalam	1,219	A	3,000	V	Nil
8.	Lalgudi	1,270	A	3,000	V	Nil
9.	Nellikuppam	2,235	A	9,000	H	Nil

A—Automatic.
B—Batch.
C—Continuous.
H—Horizontal.
M—Manual.
V—Vertical.
Source.—Factory Returns..

TABLE III-Cii

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Sulphitation or carbonation process	Settling	Filtration	Pre-heater H.S. (sq. ft.)	Vapour cell H.S. (sq. ft.)	Evaporators: Type	Evaporators: Vapour bleeding
1.	Pandiarajapuram	244	B(sul)	C	B	Nil	Nil	Q	Nil
2.	Ambur	813	B (Sul)	C	C	1,000	Nil	Q	Nil
3.	Pettaivaytalai	813	B (Sul)	C	C	Nil	4,500	Q	Yes
4.	Madurantakam	1,016	C (Sul)	C	C	Nil	Nil	Q	Yes
5.	Amravathi	914	B (Sul)	C	C	1,000	Nil	Q	Yes
6.	Pugalur	1,016	C (Sul)	C	B	Nil	3,541	Quin.	Yes
7.	Vadapathimangalam	1,219	B (Sul)	C	C	1,000	Nil	Q	Nil
8.	Lalgudi	1,270	C (Sul)	C	C	Nil	Nil		Yes
9.	Nellikuppam	2,235	B (Sul)	C	C	Nil	Nil	1 Q 1 Quin.	Nil

B—Batch.
C—Continuous.
Q—Quardruple.
Quin—Quintuple
Sul.—Sulphitation.
Source.—Factory Returns.

सत्यमेव जयते

TABLE III-C$_{iii}$

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Pans		Low grade crystallisers	
			Total capacity (tons)	Per cent coil capacity	No.	Per cent water cooled capacity
1.	Pandiarajapuram . . .	244	35	34	6	Nil
2.	Ambur	813	75	Nil	4	100
3.	Pettaivaytalai . . .	813	128	Nil	5	100
4.	Madurantakam . . .	1,016	90	Nil	4	Nil
5.	Amravathi	914	100	Nil	4	100
6.	Pugalur	1,016	133	Nil	5	100
7.	Vadapathimangalam . .	1,219	120	Nil	4	100
8.	Lalgudi	1,270	155	Nil	6	100
9.	Nellikuppam	2,235	230	30	2 (sets works-poor)	100

Source.—Factory Returns.

सत्यमेव जयते

TABLE III-C$_{iv}$

Boiling House Equipment

Sl. No.	Name of Factory	Capacity (tonnes/day)	Centrifugals			
			Ordinary		High speed	
			No.	Size	No.	Size
1.	Pandiarajapuram . .	244	9	30″×18″	Nil	..
2.	Ambur	813	Nil	..	5 4	49″×32″ 45″×25″
3.	Pettaivaytalai	813	16	42″×20″	Nil	..
4.	Madurantakam	1016	9	42″×24″	4	48″×24″
5.	Amravathi	914	5	49″×32″	3	49″×25″
6.	Pugalur	1016	11 5	42″×20″ 40″×24″	3	48″×24″
7.	Vadapathimangalam . .	1219	4	49″×32″	3	45″×25″
8.	Lalgudi	1270	5	49″×32″	5	48″×24″
9.	Nellikuppam	2235	8	36″×25″	12	40″×25″

Source.—Factory Returns.

TABLE IV-Ai

Cane Quality (Pol per cent cane)

Sl. No.	Name of Factory	Pol per cent cane 1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	11·56	11·31	11·67	11·83
2.	Ambur	..	12·09	12·82	13·22
3.	Pettaivaytalai	11·51	11·38	11·57	11·30
4.	Madurantakam	..	10·23	11·43	11·93
5.	Amravathi	12·18	12·42	11·53	11·26
6.	Pugalur	12·19	11·73	12·45	12·65
7.	Vadapathimangalam	10·70	10·75	11·33	10·60
8.	Lalgudi	..	..	..	12·21
9.	Nellikuppam	11·46	11·26	11·69	11·78

Source.—Factory Returns.

TABLE IV-Aii

Cane Quality (Fibre per cent cane)

Sl. No.	Name of Factory	Fibre per cent cane 1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	11·89	12·20	12·87	12·83
2.	Ambur	..	13·55	13·90	13·37
3.	Pettaivaytalai	14·50	14·59	15·22	13·89
4.	Madurantakam	—	15·07	15·22	15·63
5.	Amravathi	15·06	13·80	14·43	13·95
6.	Pugalur	12·72	12·75	13·19	31·36
7.	Vadapathimangalam	15·01	13·71	14·13	13·40
8.	Lalgudi	..	..	..	13·05
9.	Nellikuppam	14·82	15·07	15·18	14·09

Source.—Factory Returns.

TABLE IV-Aiii

Cane Quality (Primary juice purity)

Sl. No.	Name of Factory	Primary juice purity			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	82·06	82·41	83·88	84·04
2.	Ambur	..	80·00	82·33	83·41
3.	Pettaivaytalai	81·34	81·76	82·01	82·16
4.	Madurantakam	..	76·56	81·64	83·18
5.	Amravathi	82·06	83·21	81·66	82·04
6.	Pugalur	83·69	82·16	83·84	83·59
7.	Vadapathimangalam	78·67	78·46	78·90	78·53
8.	Lalgudi	..	..	..	82·88
9.	Nellikuppam	83·57	84·03	83·58	83·86

Source—Factory Returns.

TABLE IV-B*i*

Time Account (Duration of season)

Sl. No.	Name of Factory	Duration of season			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	201	301	249	161
2.	Ambur	..	205	177	133
3.	Pettaivaytalai	239	254	256	159
4.	Madurantakam	..	158	158	140
5.	Amravathi	131 (Special)	191 (Main+Spl)	262 (Main+Spl)	29 (Main)
6.	Pugalur	239	246	209	144
7.	Vadapathimangalam	169	171	152	130
8.	Lalgudi	..	..	..	81
9.	Nellikuppam	182	200	201	127

Source—Factory Returns.

TABLE IV-Bii

Time Account (Time loss)

Sl. No.	Name of Factory	Time lost per cent available			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	5·69	8·02	9·97	7·96
2.	Ambur	..	26·82	20·47	18·77
3.	Pettaivaytalai	28·13	11·87	18·15	15·26
4.	Madurantakam	..	28·95	36·35	38·50
5.	Amravathi	38·86	22·42	39·28	62·79
6.	Pugalur	14·00	14·03	12·46	9·11
7.	Vadapathimangalam	11·98	8·84	15·25	18·13
8.	Lalgudi	..	..	..	58·63
9.	Nellikuppam	12·16	10·59	11·39	7·54

Source—Factory Returns.

TABLE IV-Ci
Technical Efficiency (Recovery)

Sl. No.	Name of Factory	Recovery per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	9·16	8·94	9·25	9·49
2.	Ambur	..	9·40	9·96	10·71
3.	Pettaivaytalai	9·19	9·10	9·19	9·03
4.	Madurantakam	..	7·16	8·76	9·42
5.	Amravathi	9·25 (Spl)	9·54 (Main) 10·06 (Spl.)	8·96 (Main) 8·75 (Spl.)	8·45 (Main)
6.	Pugalur	10·15	9·68	10·45	10·54
7.	Vadapathimangalam	8·50	8·63	9·00	8·39
8.	Lalgudi	..	..	..	9·41
9.	Nellikuppam	8·93	8·70	9·22	9·57

Source—Factory Returns.

TABLE IV-Cii
Technical Efficiency (Total losses)

Sl. No.	Name of Factory	Total losses per cent cane			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	2·42	2·39	2·44	2·36
2.	Ambur	..	2·71	2·88	2·53
3.	Pettaivaytalai	2·34	2·30	2·40	2·29
4.	Madurantakam	..	3·09	2·69	2·53
5.	Amravathi	2·95 (Spl.)	2·70 (Main) 2·52 (Spl.)	2·60 (Main) 2·80 (Spl.)	2·81 (Main)
6.	Pugalur	2·06	2·07	2·02	2·13
7.	Vadapathimangalam	2·22	2·14	2·35	2·23
8.	Lalgudi	..	..	..	2·82
9.	Nellikuppam	2·55	2·58	2·49	2·23

Source—Factory Returns.

TABLE IV-Ciii
Technical Efficiency (Reduced overall Extraction)

Sl. No.	Name of Factory	Reduced overall extraction			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	82·76	82·62	82·18	83·18
2.	Ambur	..	83·93	82·77	84·39
3.	Pettaivaytalai	84·97	85·37	84·63	84·29
4.	Madurantakam	..	80·46	83·49	83·85
5.	Amravathi	82·17 (Spl.)	82·46 (Main) 83·70 (Spl)	82·29 (Main) 81·32 (Spl.)	80·29 (Main)
6.	Pugalur	85·87	86·17	86·88	86·19
7.	Vadapathimangalam	86·16	86·59	85·81	85·50
8.	Lalgudi	..	..	..	81·36
9.	Nellikuppam	82·33	81·66	83·14	84·38

Source—Factory Returns.

सत्यमेव जयते

TABLE IV-Di.

Total Fuel Consumption

Sl. No.	Name of Factory	Total fuel consumed % cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	26·40	27·09	28·85	28·49
2.	Ambur	..	30·59	32·58	28·51
3.	Pettaivaytalai	30·22	30·65	33·23	29·97
4.	Madurantakam	..	34·52	33·65	34·64
5.	Amravathi	32·19	31·28	36·52	N.A.
6.	Pugalur	26·84	25·95	26·74	26·64
7.	Vadapathimangalam	30·12	26·62	28·44	27·58
8.	Lalgudi	..	..	..	44·14 (trial season)
9.	Nellikuppam	31·86	32·55	32·15	27·92

Source—Factory Returns.

TABLE IV-Dii

Extra Fuel Consumption

Sl. No.	Name of Factory	Extra fuel consumed % cane (in terms of bagasse)			
		1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	0·576	0·420	0·498	0·653
2.	Ambur	..	2·09	1·70	1·21
3.	Pettaivaytalai	0·198	0·314	0·782	0·498
4.	Madurantakam	..	2·11	2·00	2·48
5.	Amravathi	0·20	2·02	5·56	N.A.
6.	Pugalur	0·87	0·39	0·53	0·42
7.	Vadapathimangalam	0·917	0·252	0·129	0·684
8.	Lalgudi	..	..	..	15·91 (trial season)
9.	Nellikuppam	0·183	0·263	0·263	0·113

Source—Factory Returns.

TABLE V

Expansion Asked for by the Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Specifications of existing milling tandem	Expansion as asked for by the factories (tonnes)	Expansion as recommended by State Cane Deptt. (tonnes)	Financial requirement as submitted by the factory (lac Rs.)
1.	Pandiarajapuram	244	17/16″×30″	1,016	1,016	116·40
2.	Ambur	813	12/25″×47″	1,300	1,500	35·00
3.	Pettaivaytalai	813	12/27″×54″	1,016	1,016*	25·00*
4.	Madurantakam	1,016	12/28″×56″	1,200	..	20·00
5.	Amravathi	914	12/25″×48″	1,300	1,300	30·00
6.	Pugalur	1,016	15/30″×60″	1,500	1,500	59·50
7.	Vadapathimangalam	1,219	12/30″×60″	..	1,500	..
8.	Lalgudi	1,270	12/28″×56″	1,500	1,500	32·00
9.	Nellikuppam	2,235	18/35″×78″	..	..	..

*Expansion going on; expected to be completed by the end of 1964.

Source.—Office of the State Cane Development Officer and Factory Returns.

TABLE VI-A

Existing Strength of Labour and Labour Considered Surplus at Present and After Modernisation

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Total labour employed	Labour surplus now		Labour surplus after modernisation	
				Skilled & semi-skilled	Unskilled	Skilled & Semi-skilled	Un-skilled
1.	Pandiarajapuram	244	443	..	..	..	..
2.	Ambur	813	560	..	25	..	..
3.	Pettaivaytalai	813	845	..	..	..	..
4.	Madurantakam	1,016	578	..	..	..	..
5.	Amravathi	914	850	..	..	..	..
6.	Pugalur	1,016	938	2	9	37	19
7.	Vadapathimangalam	1,219	476	..	..	..	..
8.	Lalgudi	1,270	497	..	..	..	..
9.	Nellikuppam	2,235	1,704	..	..	318 (in all)	..
	TOTAL		6,891	2	34	374 (in all)	

Source.—Factory Returns.

TABLE VI-B

Productivity of Factories

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Mandays/tonne of sugar			
			1959-60	1960-61	1961-62	1962-63
1.	Pandiarajapuram	244	26·27	18·80	18·77	14·80
2.	Ambur	813	..	8·62	7·70	7·17
3.	Pettaivaytalai	813	15·40	11·23	17·95	12·61
4.	Madurantakam	1,016	..	14·17	11·55	11·58
5.	Amravathi	914	16·66	12·65	18·84	N.A.
6.	Pugalur	1,016	11·67	9·17	11·15	9·21
7.	Vadapathimangalam	1,219	7·34	6·07	5·68	7·40
8.	Lalgudi	1,270	..	..	..	12·69
9.	Nellikuppam	2,235	9·93	9·99	9·68	8·57

N.A.—Not Available.

Source.—Factory Returns.

TABLE VII-A

Utilisation of By-products (Bagasse)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Bagasse (Average of 5 seasons)			
			Production ('000 tonnes)	Used as fuel ('000 tonnes)	Saved & Sold (tonnes)	Value realised (Rs.)
1.	Pandiarajapuram	244	19·76	19·76	Nil	Nil
2.	Ambur	813	34·84	34·84	Nil	Nil
3.	Pettaivaytalai	813	45·45	45·45	Nil	Nil
4.	Madurantakam	1,016	27·19	27·19	Nil	Nil
5.	Amravathi	914	26·21	26·21	Nil	Nil
6.	Pugalur	1,016	48·99	48·99	Nil	Nil
7.	Vadapathimangalam	1,219	35·68	35·68	Nil	Nil
8.	Lalgudi	1,270	9·51*	9·51	Nil	Nil
9.	Nellikuppam	2,235	117·08	116·99	92	3,203
			364·71			

*First Season.

Source.—Factory Returns.

TABLE VII-B

Utilisation of By-Products (Molasses)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Molasses (Average of 5 seasons)			
			Production ('000 tonnes)	Quantity utilised for distillery & trade ('000 tonnes)	Surplus left (tonnes)	Value realised ('000 Rs.)
1.	Pandiarajapuram .	244	3·12	3·12	Nil	49·06
2.	Ambur . .	813	5·66	4·30 (exported)	1,366	99·23
3.	Pettaivaytalai .	813	6·37	6·13	240 (Waste)	100·74
4.	Madurantakam	1,016	4·05	N.A.	N.A.	22·54
5.	Amravathi .	914	3·76	2·65	1,106 (Waste)	43·41
6.	Pugalur . .	1,016	8·14	8·14	Nil	163·53
7.	Vadapathimangalam . .	1,219	5·56	N.A.	N.A.	117·99
8.	Lalgudi . .	1,270	1·68*	1·68	Nil	83·87
9.	Nellikuppam .	2,235	20·51	20·51	Nil	117·87
			58·85			

*First Season.
N.A.—Not Available.
Source.—Factory Returns.

TABLE VII-C

Utilisation of By-Products (Press mud)

Sl. No.	Name of Factory	Capacity (tonnes/ day)	Press mud (Average of 5 Seasons)			
			Production ('000 tonnes)	Sold or utilised as manure ('000 tonnes)	Surplus left (tonnes)	Value realised (Rs.)
1.	Pandiarajapuram .	244	1·00	1·00	Nil	1,377
2.	Ambur . .	813	4·13	1·20	2,930	3,630
3.	Pettaivaytalai .	813	4·40	3·63	770	3,422
4.	Madurantakam	1,016	2·51	1·69	816	5,243
5.	Amravathi .	914	2·73	2·67	60	540
6.	Pugalur . .	1,016	4·14	4·14	Nil	N.A.
7.	Vedapathimangalam . .	1,219	3·93	3·78	150	N.A.
8.	Lalgudi . .	1,270	0·77*	0·77	Nil	769
9.	Nellikuppam .	2,235	10·48	10·48	Nil	35,301
			34·09			

*First Season.
N.A.—Not Available.
Source.—Factory Returns.

TABLE VIII-A

Profit After Tax or Loss of the Factories During the 10 *Years Ending* 1961-62

(In lacs of Rs.)

Name of Factory	1952--53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	Total	Average
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Pandiarajapuram	—5·48	—0·53	0·72	3·26	4·16	6·16	4·09	4·38	4·23	5·22	26·21	2·62
2. Ambur .	..	..	..	..	..	..	..	..	N.A.	N.A.	N.A.	N.A.
3. Pettaivaytalai .	..	..	..	..	..	..	6·05	7·07	6·73	5·59	25·44	6·36
4. Madurantakam .	..	..	..	..	..	..	..	..	N.A.	N.A.	N.A.	N.A.
5. Amravathi	..	..	..	..	..	..	..	..	0·82	1·09	1·91	0·95
6. Pugalur* .	—8·57	2·12	10·17	12·73	15·13	15·84	13·30	14·81	10·57	9·71	95·81	9·58
7. Vadapathimangalam	..	..	..	—13·20	—8·20	0·12	9·79	4·76	2·91	5·83	2·01	0·29
8. Nellikuppam .	21·28	16·04	22·28	28·49	32·40	36·93	50·30	51·63	46·01	33·64	339·20	33·92
Average .	+1·81	+4·41	+8·34	+6·26	+8·70	+11·81	+13·92	+13·78	+10·18	+8·73	+9·26	+9·26

*Includes Samalkot factory also.

N.A.—Not Available.

Note:—Determination of income tax on profits is a very elaborate process and it has not been possible for the Committee to assess the exact position. Fifty per cent of the gross profit has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

TABLE VIII-B

Profitability of the Factories in Different Capacity Slabs

Amount in lacs of Rs.)

Sl. No.	Name of Factory	1952-53 to 1956-57			1957-58 to 1961-62			1952-53 to 1961-62		
		No. of years for which data available	Profit (+) or loss (—) for above period	Average profit or loss per year	No. of years for which data available	Profit (+) or loss (—) for the above period	Average profit or loss per year	No. of years for which data available	Profit (+) or loss (—) for the above period	Average profit or loss per year
1	2	3	4	5	6	7	8	9	10	11
	Factories with capacities between 500 to 749 tonnes.									
1.	Pandlarajapuram .	5	2·13	0·43	5	24·08	4·82	10	26·21	2·62
	Factories with capacities between 750 to 999 tonnes.									
1.	Pettaivaytalai .	..	..	..	4	25·44	6·36	4	25·44	6·36
2.	Amravathi . .	..	..	..	2	1·91	0·95	2	1·91	0·95
	Average Profit per year . . .						4·56			4·56
	Factories with capacities of 1000 tonnes and above.									
1.	Pugalur* . .	5	31·58	6·32	5	64·23	12·85	10	95·81	9·58
2.	Vadapathimangalam	2	—21·40	—10·70	5	23·41	4·68	7	2·01	0·29
3.	Nellikuppam . .	5	120·69	24·14	5	218·51	43·70	10	339·20	33·92
	Average Profit per year . . .			7·70			15·31			11·81

*Includes Samalkot factory of Andhra Pradesh.

TABLE VIII-C

Dividends Paid on Ordinary Shares by the Factories Since 1952-53

(Per cent paid up capital)

Sl. No.	Name of Factory	1952-53	1953-54	1954-55	1955-56	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62
1	2	3	4	5	6	7	8	9	10	11	12
1.	Pandiarajapuram . .	Nil	Nil	Nil	Nil	Nil	2·50	5·00*	7·50*	9·00*	11·00*
2.	Ambur	..	..	..	..	..	..	..	..	Nil	Nil
3.	Pettaivaytalai . . .	..	..	..	..	..	..	Nil	Nil	8·00*	6·00*
4.	Madurantakam . .	..	..	..	..	..	..	..	..	Nil	Nil
5.	Amravathi	..	..	..	..	..	..	..	..	Nil	Nil
6.	Pugalur	..	..	5·00	10·00	12·00	10·00	18·25	25·75*	21·00*	18·00*
7.	Vadapathimangalam . .	..	..	..	Nil	Nil	Nil	Nil	Nil	Nil	Nil
8.	Nellikuppam . . .	17·90	23·82*	21·84*	15·00*	15·00*	20·00*	21·57*	21·43*	21·43*	21·43*

*Subject to income tax.

PONDICHERRY

1. GENERAL ASPECTS

The Pondicherry State is situated towards the south of Madras City on the east coast and roughly lies between latitude 11° to 12° (N) and longitude 79·5° to 79·8° (E) and is in the tropical belt. There is only one sugar factory in the State viz., New Horizon Sugar Mills Limited, which is situated at Sacrur (Ariour) at a distance of about 10 miles from the Pondicherry town.

The average annual rainfall in the State ranges between 1200 to 1400 mm. The range of minimum and maximum temperatures is 12·5°C—15°C and 42·5°—45°C respectively.

Total area of the State is 482 sq. kms. Area (net) cultivated is 80,591 acres, total area under food crops which are mainly paddy, *ragi*, *cumbu*, *varagu* and *thonai* is 97,340 acres and the area under cash crops which are mainly groundnut, coconut, gingelly, sugarcane, chillies and pepper is 16,924 acres. Net area irrigated is 58,312 acres.

The population of the State according to 1961 census was 3,69,083. The average density of population is 766 per square kilometre.

Sugarcane is one of the chief cash crops and occupies an important place in the agricultural economy of the State. The only sugar factory which is situated in the State sustains about 2,000 cultivators and nearly 500-600 factory workers besides a number of persons carrying on small trades in the vicinity of the factory.

Cane development

No cane cess or purchase tax is levied in this State and no act is in force for the collection of above taxes. The Sugarcane Development Scheme is operated in the State from the State budget.

The organisational set up of the factory for cane development work is as follows :

(1) Plantation Manager

(2) Two circles supervisors for 2,500 acres each

(3) One Chemist and one Demonstrator and a field clerk for every 300 acres.

The main function of the cane development department of the factory is to advise methodical cultivation by up-to-date methods, measurements of area, maintaining seed nurseries and verification of advances, harvesting and transport. The number of trained persons is about 22.

The loan for development work are provided to the farmers by the Sugarcane Co-operative Society and realised in cane proceeds.

2. TECHNICAL ASPECTS

2.1 Area under cane, sugarcane production and utilisation of cane for white sugar

The area under cane in the factory zone has varied from 3600 to 6600 acres, estimated yield per acre is 30-40 tonnes and the total production of cane has varied from 125000 to 280000 tonnes. Almost the entire crop is utilised for white sugar manufacture. There is no problem of diversion of cane for jaggery manufacture.

The factory is getting 100 per cent supplies at the gate.

2.2 Irrigation, application of manures and fertilizers, supply of seed and means of communication

There is no problem regarding the above developmental items in this factory area. All the area under cane is irrigated. Requirements of manures and fertilizers and seed are met by the growers with the help of the Cane Development Department of the factory and Sugarcane Cooperative Society. Means of communication are adequate and the existing total length of *pucca* roads in the factory zone is about 175 kms.

2.3 Duration of season, cane crushed, sugar made and average recovery obtained

The position with respect to average duration of season, cane crushed, sugar produced and average recovery recorded by the Pondicherry factory during the preceding three years (the factory started crushing from the season 1960-61) is as follows :

Year				Average duration (22 hrs.)	Cane crushed (lac tonnes)	Sugar made (000 tonnes)	Average recovery per cent cane
1960-61	..	..	..	303	2·72	19·57	7·19
1961-62	..	..	..	126	1·14	10·27	8·99
1962-63	..	..	..	128	1·12	9·74	8·66

It may be seen from the above that in the first year of its working the factory worked for about 13 months and produced 19·57 thousand tonnes of sugar but as the peak recovery period is November to March, the factory has in subsequent years worked for 126 and 128 days respectively producing 10270 and 9740 tonnes of sugar only.

The factory started working with a licensed capacity of 1219 tonnes from 1960-61 season and is thus only four years old. Actual maximum crushing rate per 24 hours attained by it in 1961-62 or 1962-63 is 956 tonnes only.

This being a newly installed plant layout etc. is quite satisfactory and plant also has got some of the modern features.

2.4 Working results

Although the yield is quite good *viz.*, 30 to 40 tonnes per acre, the quality of sugarcane produced is very poor. Pol per cent cane in 1961-62 and 1962-63 was 11·51 and 11·10 and primary juice purity was 83·32 and 82·15 respectively. The recovery recorded in these two years was only 8·99 and 8·66 respectively. The technical efficiency of the factory is also poor total losses being 2·54 and 2·46 in 1961-62 and 1962-63 respectively.

3. ECONOMIC ASPECTS

3·1 Financial set-up

The sugar factory in Pondicherry went into production for the first time in 1960-61. It is a limited company with a paid up capital of Rs. 26·41 lacs. At the close of 1961-62 there were no reserves and the net worth of the company thus stood at Rs. 26·41 lacs only. Balance sheet for 1961-62 received from the factory reveals the following situation :

	(Amount in lacs Rs.)
(*i*) Gross block	128·26
(*ii*) Accumulated depreciation	30·11
(*iii*) Net block	98·15
(*iv*) Net worth	26·41
(*v*) Surplus of net worth	(—)71·74
(*vi*) Debentures	86·90
(*vii*) Net available resources	(+)15·16
(*viii*) Investments	0·18
(*ix*) Net block as per cent of gross block	76·5

It will be seen that out of the total capital of Rs. 113·31 lacs (paid up + debenture capital) as much as 77 per cent has been obtained in the form of debentures which bear 7 per cent interest.

3·2 Profit and loss position

During the first two years of working, the position was as under :

Year	Profit(+) or loss (—) in lacs of Rs.
1960-61	(—)0·16
1961-62	(+)3·81
	(+)3·65

The Company has also reported a loss of Rs. 1·00 lac during the period of construction, thus bringing down the total profit upto 1961-62 to Rs. 2·65 lacs.

As against the net profit of Rs. 2·65 lacs upto 1961-62, the company distributed a sum of Rs. 11·69 lacs in 1961-62 as dividend, declaring as much as 38·64 per cent dividend on ordinary shares. The balance of Rs.9·04 lacs was withdrawn from Development Rebate reserve earned during 1960-61, thus off-setting the entire amount available in the reserves.

4. RECOMMENDATIONS

The factory is situated in an area quite suitable for sugarcane but the quality of cane needs to be improved considerably. Selection of cane varieties suitable for the tract, improvement in manurial and irrigation schedules, attention to problems of drainage and maturity harvesting need considerable attention. Technical working also needs improvement.

The factory has asked for expansion to 1500 tonnes capacity and proposes to meet the entire cost of expansion (about Rs. 40 lacs) from its own resources. The potentialities for cane supplies for the increased capacity are there. The Committee, therefore, considers that if the expansion applied for is granted the economy of the factory would improve substantially.

सत्यमेव जयते

KERALA

1. GENERAL ASPECTS

The Kerala State is situated on the West Coast and roughly lies between latitudes 8·3° to 12·8° and longitude 75° to 77·4° and is thus in the tropical belt. The climate of the whole region is generally temperate and the rainfall heavy.

Total area of the State is about 38,860 sq. kilometres. Total area under all crops is about 53·82 lac acres and total irrigated area is about 8·80 lac acres. Main food crops of the State are rice, millets, pulses, betelnuts and tapioca and main cash crops are coconut, tea, coffee, rubber sugarcane, cardamom, gingelly, pepper and cashewnut etc.

The average density of population is 434 per sq. km. Of the total population 53·6 per cent depends upon agriculture, though the per capita extent of cultivated land is only 30 cents. The non-agricultural population is about 6·3 million.

The main large scale industries of the State are rubber, plywood, fertilisers and chemicals, rayons, glass, sugar, cement, textiles, soaps, ceramics and shark liver oil.

There was only one sugar factory in the state upto 1962-63 *viz.*, Pamba River Factory of the Travancore Sugars & Chemicals Ltd., situated at Tiruvalla and having a licensed capacity of 508 tonnes per day. From the season 1963-64 one more factory *viz.* The Mannam Co-operative Sugar Mills Ltd., Pandalam, District Alleppy has started working with a licensed capacity of 1016 tonnes per day. One more factory *viz.*, The Co-operative Sugar Ltd., Kozhinjampara, District Palghat, which was licensed against the Third Plan target for a crushing capacity of 1016 tonnes/day is also likely to go into production shortly.

Cane development

No cane cess is payable by sugar factories of this State, but sugarcane has been subjected to a tax at the rate of 2 per cent at the point of last purchase since April, 1962. The details of tax collected during the preceding two seasons and the amount spent on cane development are given below :—

Season	Tax collected (000 Rs.)	Amount spent on cane development (000 Rs.)
1962-63	115·12	318·7
1963-64	95·07	345·8

Sugar development schemes in Kerala during the Third Five Year Plan

(i) *Supply of Seeds and Establishment of Seed Farms* (*Plan provision Rs.* 9·43 *lacs*)—One of the problems confronting the cane growers of the State is the dearth of good quality planting materials. This scheme envisages the establishment of three sugarcane seed farms in the State, two of 25 acres each and one of 10 acres, for the multiplication of good quality canes and distribution to the cane growers through registered growers. In order to give an incentive to cane cultivation for using good quality planting material, a subsidy @ 37 paise per maund is given on the quantity of sets used for planting.

The acquisition of sites for the establishment of seed farms is in progress.

(ii) *Plant Protection Measures* (*Plan provision of Rs.* 0·50 *lacs*)—The scheme is for the supply of copper sulphate to the sugarcane growers for plant protection work.

Every year 10,000 lbs. of copper sulphate is being supplied to the cane growers at 25 per cent subsidised rates. This is estimated to benefit an area of 10,000 acres during the Third Plan.

(iii) *Manurial and Cultural Demonstrations* (*Plan provision Rs.* 0·50 *lacs*)—Demonstration plots depicting improved cultural practices are laid out in the cultivators' fields, to impress upon them its benefits. Every year 100 such demonstration plots are laid out. The expenditure is towards the cost of seeds, fertilizers, fungicides, etc., given to the cultivators.

(iv) *Crop Competition* (*Plan provision Rs.* 0·10 *lacs*)—To create a spirit of healthy competition among the sugarcane cultivators, crop competitions are conducted at Taluk and District levels in the sugarcane growing areas of the State.

(v) *Roads in Sugar Factory Areas* (*Plan provision Rs.* 10·00 *lacs*)—The proposal is to construct new roads as well as to improve existing roads around the sugar factories.

(vi) *Irrigation Facilities* (*Plan provision Rs.* 3·50 *lacs*)—The scheme is for providing irrigation facilities for the sugarcane crop by advancing medium term loans to the cultivators for sinking wells and installation of pumping sets. Loans @ Rs. 5,000 per unit consisting of one well and one pump set will be given. The Third-Plan target is 70 such units.

(vii) *Publicity Propaganda* (*Plan provision Rs.* 0·10 *lac*)—The scheme is for conducting exhibitions and public meetings to make the cultivators increase the area and production of cane and adopt improved agricultural practices.

(viii) *Strengthening of Staff* (*Plan provision Rs.* 1·97 *lacs*)—Under the scheme additional staff has been posted for cane development work and a jeep has been purchased for the use of the Sugarcane Development Officer.

2. TECHNICAL ASPECTS

2.1 Culturable area, area under cane, sugarcane production and utilisation of cane for white sugar in the zone of the factory

Total culturable area in the zone of the factory is 8250 acres, area under cane has varied from 7100 to 7900 acres, estimated yield per acre is 17-23 tonnes and the total production of cane has varied from 1,28,000 to 1,65,000 tonnes during the last four years. About 80 to 92 per cent of the total cane production is utilised for white sugar manufacture.

2.2 Cane supplies

The factory is getting cent per cent supplies at the gate. This is the only factory in India where cane transport is water-borne. Cane is carried in country boats, bundled in cane chain slings on either side of the boat each bundle weighing about 2½ tons. Both the bundles are hoisted up by a tower crane and after weighment on a Dennison weighbridge is directly fed into the cane carrier. There is a small quantity of cane coming by carts or head loads. These are arranged in cane trucks and bundled in the chains for weighment and feeding. These truck load consignments weigh about 2-2½ tons.

Receipts approximately by boat	98 per cent
Receipts approximately by head-load	2 per cent

As the cane transport is water borne, the cane crushing season is also dependent on the navigability of the three main rivers on the sides of which cane is planted. As planting is influenced by the rains and the floods, planting is done earlier in the upper reaches of the rivers and late planting is done in the lower reaches.

The factory has got cane department with field staff working all over the villages.

Cutting orders are issued for a day's supply—a day prior to the date of actual harvesting and delivered to the growers through the field staff.

2.3 Duration of season, cane crushed, sugar made and average recovery obtained

The position with respect to average duration (22 hrs.) of season, cane crushed, sugar produced average recovery recorded by the Pamba River factory during the preceding five years is as follows :

Year	Average duration (22 hrs.)	Cane crushed ('000 tonnes)	Sugar made ('000 tonnes)	Average recovery per cent cane
1958-59	182	135·35	11·24	8·30
1959-60	155	121·19	10·05	8·29
1960-61	153	118·28	10·50	8·88
1961-62	162	124·88	10·77	8·62
1962-63	183	141·85	12·01	8·47

It may be seen from the above that during the last five years the average duration (22 hours) has varied from 153 days in 1960-61 to 183 days in 1962-63. Maximum sugar produced in any of these years was 12010 tonnes in 1962-63 and the maximum recovery of 8·88 per cent cane was recorded in 1960-61. Incidentally the rate of crushing per 24 hours operation was also the highest in 1960-61, being 852·2 tonnes.

The consumption of sugar in the State was about 67,000 tonnes in 1960-61. The State is thus considerably deficit in sugar.

2.4 Age of the plant and its machinery etc.

This factory was established in the year 1948 with a crushing capacity of 500 tons per day and is thus 16 years old. The licensed capacity still continues to be the same, but its actual crushing capacity at present is about 770 tonnes per day.

The milling tandem of the factory consists of two sets of knives, three 3-roller mills of size 29″ × 56″ driven by a steam engine of 300 H.P.

In the boiling house juice weighment is automatic, juice heaters are of horizontal type, sulphitation tanks and subsider are of continuous type and the filtration is of batch type. Evaporator is a quadruple effect with bleeding arrangement to juice heaters, all the pans are of calandria type, low grade crystallizers are of Werkspoor type and the centrifugals are all of ordinary type.

The steam and power plant consist of boilers of 160 p.s.i.g. working pressure without any heat recovery system and one A. C. turbo-alternator of 750 K.W. The plant is thus semi-electric.

2.5 Working results

सत्यमेव जयते

The quality of sugarcane produced in the area is very poor. Pol per cent cane during the last five seasons (1959-60 to 1963-64) has varied between 10·50 and 11·04 only and primary juice purity 80·71 to 82·55. The recovery recorded during these years was, therefore, only 8·29 to 8·88 per cent.

The technical efficiency of the factory is quite good, total losses having varied between 2·17 and 2·27 during the above mentioned seasons.

3. ECONOMIC ASPECTS

3.1 Financial set-up

The Pamba River sugar factory at Tiruvalla in Kerala is a limited company with a paid up capital of Rs. 45 lacs. A sum of Rs. 10·37 lacs was also available in reserves thus raising net worth of the company to

Rs. 55·37 lacs at the close of 1961-62. Analaysis of Balance Sheets received from the company reveals the following situation :

(Amount in lacs of Rs.)

Particulars	1953-54	1957-58	1961-62	Comparative development	
				1957-78 over 1953-54	1961-62 over 1957-58
i) Gross block	59·91	65·59	75·95	5·68	10·36
ii) Accumulated depreciation	17·87	27·53	39·47	9·66	11·94
iii) Net block	42·04	38·06	36·48	(—)3·98	(—)1·58
iv) Net worth	55·38	56·08	55·37	0·70	(—)0·71
v) Surplus of net worth	13·34	18·02	18·89	4·68	0·87
vi) Debentures	—	—	—	—	—
vii) Net available resources	13·34	18·02	18·89	4·68	0·87
viii) Investments	—	—	—	—	—
ix) Investment as % of surplus net worth	—	—	—		
x) Net block as % of gross block	70·2	57·7	48·0		

It will be seen that at the close of 1961-62, out of Rs. 55·37 lacs net worth, a sum of Rs. 36·48 lacs stood blocked up in plant, machinery and buildings, leaving a surplus of Rs. 18·89 lacs at the factory's disposal. Neither any long term loan has been obtained nor any investment has been made in shares and debentures of other companies or in Government securities. It will also appear that the factory has made a gross investment of Rs. 10·36 lacs in plant and machinery during the last four years as against Rs. 5·68 lacs in the preceding four years. However, the depreciation has been much more than the additions and renovations and the value of net block has stepped down from 70·2 per cent of the gross block in 1953-54 to 57·7 per cent in 1957-58 and 48·0 per cent in 1961-62. Net worth of the Company at close of 1961-62 also stood at the samel evel as eight years before.

This analysis would show that on the whole there has been no significant effort so far towards the development of sugar industry in this region.

3.2 Profit and loss position and dividends declared

The profit and loss position* as revealed from balance sheets of the Pamha River factory for the last ten years is given below and it would generally indicate the financial position. Dividends declared on ordinary shares are also shown side by side—

Year	Profit after tax (+) or loss(—) in lacs of Rs.	Dividends declared on ordinary shares
1952-53	+0·62	Nil
1953-54	—0·07	Nil
1954-55	+6·17	7·5
1955-56	+4·77	10·0
1956-57	+6·29	10·0
1957-58	+4·71	10·0
1958-59	+3·78	10·0**
1959-60	+4·74	10·0**
1960-61	+2·89	7·5**
1961-62	+1·71	5·0**
TOTAL ..	+35·61	

NOTE— *Determination of income tax on profits is a very elaborate process and it has not been possible for the Committee to assess the exact position. Fifty per cent of the gross profit has been taken towards income tax in accordance with the current rates and it is hoped that the figures thus arrived at will roughly indicate the position.

**Subject to Income Tax.

It will be seen that on the whole there have been good profits each year, the average for 10 years being Rs. 3·56 lacs per year. Reasonable dividends have also been declared in each of the last 8 years.

4. RECOMMENDATIONS

The only problem which the factory presented before the Committee is the problem of low recovery.

The recovery has ranged between 8·2 and 8·9 or say an average ° per cent. This is because of poor cane quality. Pol per cent cane is h

10·5 and 11·0 and purity of primary juice 81·0 to 82·5. Although the factory has been trying to arouse quality conciousness amongst the growers by *interse*, distribution of cane price on brix basis, climatic conditions do not appear to be conducive to development of high sucrose content in cane.

The factory has represented that it should not be required to pay the same cane price which is linked to a recovery of 10·4. Since the gap between 8·5 and 10·4 is very wide, the contention of the factory needs examination.

The Committee further feels that the State should have a Sugarcane Research Station where all aspects leading to improvement in quality, including development of suitable varieties could be studied.